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This journal, Langstroth's handwritten observations, notes and sketches on bees, was composed in an 1834 edition of John Todd's *Index Rerum* with additional pages inserted. Todd's introduction and directions presented at the beginning of this journal are highly recommended reading, as Langstroth followed and sometimes strayed from the prescribed organizational scheme.

Todd's method stated that entries were to be listed based on the first letter of the topic followed by the first vowel encountered. For example, "Drones" is entered under "**D o**"; "Hive" is under "**H i**" and so forth. From time to time Langstroth's writings on a topic extend across two pages, left to right. Occasionally his thoughts run for many pages, which necessitated inserting blank pages to capture his ideas. At times he used his journal to record thoughts for his sermons as topics freely intermingled with his bee observations. Daily weather notes, sketches, diagrams, sales figures for hives and other goods are also present.

Multiple instances of varying page numberings appear throughout the journal, probably added by librarians, archivists or researchers over the years. During the process of creating structural metadata for online viewing the page numbers described in the metadata were only those identified as being from Langstroth's own handwriting. All other page numbering has been ignored.

Although it is unclear if they knew each other, Langstroth (1810-1895) and Todd (1800-1873) were both Yale graduates, each were Congregationalist preachers in Massachusetts and both lived in Philadelphia at various times. According to his autobiography, *John Todd, The Story of his Life told mainly by himself* (New York: Harper & Brothers, 1876), Todd was also an amateur beekeeper.

A partial transcript of Langstroth's journal is in the Phillips Beekeeping Collection of the Albert R. Mann Library, Cornell.

Michael Cook
Ithaca, NY
March 2020

Cornell University is an equal opportunity, affirmative action educator and employer.

This journal was restored and rebound in 1959 by Anne A. Weeks of Ithaca, New York. The pages were retained in exactly the same order as prepared by the Rev. L. L. Langstroth, but a number of blank pages at the end of the journal were removed in order to reduce the bulk of the volume.

[illegible] Campbell

Appellant

[illegible]

[illegible] additional paper —

[illegible] matter relating to Bank [illegible]

— for 29. [illegible]

Vol. 1 —

SF
521 [illegible]
L213

E 7410

INDEX RERUM:

OR

INDEX OF SUBJECTS;

INTENDED AS A MANUAL,

TO AID THE

STUDENT AND THE PROFESSIONAL MAN,

IN PREPARING HIMSELF FOR USEFULNESS.

WITH

AN INTRODUCTION,

ILLUSTRATING ITS UTILITY AND METHOD OF USE.

BY REV. JOHN TODD,
PASTOR OF THE EDWARDS CHURCH, NORTHAMPTON.

Nocturnâ versate manu, versate diurnâ.—Hor.

NORTHAMPTON......J. H. BUTLER.
1834.

Entered according to Act of Congress, in the year 1833,
By J. H. Butler,
In the Clerk's Office of the District Court of Massachusetts.

METCALF, PRINTER.....NORTHAMPTON.

INTRODUCTION.

The plan of the following sheets grew out of the author's own wants, and his repeated attempts to supply these wants. Its utility has been tested by his own experience. In conversation with gentlemen of different professions, to whom he has shewn his own Index, there has been but one opinion expressed, a strong approbation of the plan, and an earnest wish that it may become the property of every student. Its only claim is, that it will aid the diligent student, and if perseveringly followed, it will at the end of a very few years, place a fund of knowledge at his ready command, which no money can purchase.

Should any one procure this Book with the expectation that it will supersede labor and study, he will be deservedly disappointed. No plans or inventions can ever do that. But if he hopes it will, with a very moderate share of time and labor spent upon it, yield him a great reward, I think I may venture to promise that he will not be disappointed.

The Common-place Book of Locke is the only one that has come into much notice; and if that has, it is not owing to any intrinsic merit which it possesses, but to its bearing his own great name, and professing to be the result of his experience. But neither that nor any other Common-place Book which I have ever seen, will either come into any thing like extensive use, or be of any essential advantage to the student, and the man of literary habits. The reason is perfectly obvious to any one who has tried to use them for any length of time. They require too much time, and too much labor. Every thing that is saved must be copied out in full, and then noted also in the Index. Few have the time, and fewer still the patience to do this. Books are so common, and so constantly multiplying, that few have the courage to undertake to make extracts, and to copy what is really valuable. I have seen multitudes of such books commenced, but have seen but very few which were not abandoned at an early hour.

Every one is aware that we frequently want the thoughts, or the materials of thought with which we have met in books which we have read, but which, though now sought after in every corner of the memory, are not to be found. Their faint impressions are seen, dim, like the ghosts of Ossian, but too distant and too undefined, to be of any use. Nor can we recollect the books in which we met them. We frequently too, wish to recall a fact, or a striking passage, or a valuable discussion, but the memory is tasked in vain. Few are aware, unless they have bestowed particular thought on the subject, how much of all our valuable reading is lost, because we retain only faint impressions of it, and have no method of recalling it.

Let a young man when he begins life, be in the habit of making an Index to all that he reads which is truly valuable, (and he ought to read nothing else,) and at the age of thirty-five or forty, he has something of his own, and which no price could purchase. Many would think hundreds of dollars well spent, could they purchase what they have thrown away; and what each one might most easily save for himself; and to aid in saving which, this Book is prepared.

One of the most distinguished and accomplished scholars of whom this or any other country can boast,* makes the following remarks; "Old-fashioned economists will tell you never to pass an old nail, or an old horse-shoe, or buckle, or even a pin, without taking it up; because although you may not want it now, you will find a use for it some time or other. I say the same thing to you with regard to knowledge. However useless it may appear to you, at the moment, seize upon all that is fairly within your reach. For there is not a fact, within the whole circle of human observation, nor even a fugitive anecdote that you read in a newspaper, or hear in conversation, that will not come in play, some time or other: and occasions will arise when they will, involuntarily, present their dim shadows in the train of your thinking and reasoning, as belonging to that train, and you will regret that you cannot recall them more distinctly."

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* William Wirt.

This is certainly a valuable thought, and a valuable opinion of a great man. It is appropriate to my subject and design. I read it some two or three years since. And now, how am I to recall it, when needed? I cannot copy out all such valuable thoughts with which I meet; and it is in vain to command the memory to retain them. Making extracts with the pen is so tedious, that the very name of a Common-place Book is associated with drudgery, and wearisomeness. But by the Index which I make out, I can preserve this, or any other extract which I wish, and that readily.

Some may think I have done little to aid them, by laying out the work of years. I might indeed, have published my own Index Rerum, and it would probably have been acceptable to some in my own profession. But it would be of but little value to any one of another profession. Every man ought to make out his own Index, according to his profession, employments, habits of reading and thinking. An Index filled out, if confined to one profession, or one kind of reading, would be too contracted for general use; and if it embraced the whole circle of reading, it would be too voluminous.

Some may hesitate about commencing such a Book, since their youth is past, and the day in which to lay up knowledge seems also to be past. Such, however, have special need of the aid here offered, and will receive special benefit from it, because, it is never too late to read to advantage, and because knowledge, like the seed of the fruit-tree which you put into the ground to-day, will yield its fruits soon; and because also, memory, as life advances, becomes more treacherous, and needs something to assist it. I feel confident that the plan is as well adapted to those who have lived past their youth, as to any other class.

The idea of publishing blank sheets is not very cheering to the fame of authorship; but mortified pride may have this consoling reflection, that many who fill out their sheets, had better have left them blank; and that each one can fill out this book more to his own satisfaction and benefit, than the most gifted mind could do for him.

DIRECTIONS FOR USING THIS INDEX.

1. Read nothing which is not worth remembering, and which you may not wish hereafter to review. Have your Index at hand, and when you meet with any thing of interest, just note it down, the subject, the Book, and the page, and any word designating its qualities, which you may please, according to the method hereafter described. The Index should be your constant companion when you read.

2. Make your Index according to subjects as much as possible, selecting that word which conveys the best idea of the subject.

3. You will find the Index ruled with blue ink, with a wide margin on the left hand of each page. The margin is to contain the word selected as a guide to the subject noted down. On the corners of the page, you will find the letters of the alphabet (capitals) and in the centre, the first five vowels, a. e. i. o. u. Each letter of the alphabet has two pages to each of the vowels, and of course, each letter has ten pages.

4. When you read any thing which you may hereafter need, place the principal word in the margin, under the first letter in that word, and the first vowel in it. I will here give some examples as they stand in my own Index. Suppose I wish to note something relating to America. I turn to A. and the vowel e. because A. is the first letter, and e. is the first vowel—thus:

AMERICA,	supposed to be known in the time of Homer: Thomas' Hist. Print. vol. 1. p. 20.
ATHEISM,	of France, picture of: Schlegel's Lect. v. 2. p. 199.
BRADFORD,	Governor, notice of: Am. Quart. Rev. v. 2. p. 497. this under B. a.
BROUGHAM,	graphic and powerful description of: Port. Rhet. Reader, p. 248.
CLINTON,	De Witt, Memoir of, &c. (good) Am. Quart. Rev. v. 5. p. 475. this under C. i.
CHRISTIAN,	religion, services rendered to mankind: Chateaub. Beaut. Christianity, p. 453.
DANIEL,	analysis of the book of: Con. Ev. Mag. v. 4. p. 46. this under D. a.
DIFFICULTIES,	of our probation considered: Butler's Anal. part 1. ch. 4.
DESTRUCTION,	of Jerusalem, accurately described: Smith's view of the Hebs. Chap. 1.
ELOQUENCE,	remarks upon, (good) Goldsmith's Bee, p. 173. this under E. o.
ENGLISH,	composition, examples of its steady improvement: Irv. Elem. Comp. p. 206.
ELOQUENT,	remarks on slavery: Cunningham's World without Souls. p. 87.

Faculties,	of man, distinguished from those of the brute: Coleridge's Friend, p. 130. this under F. a.
Frederic,	the Great—instances of severity and ingratitude: Buck's Works, v. 4. p. 225.
Griesbach's,	New Test. remarks on: Ch. Spec. vol. 5. p. 187. under G. i.
Gentleness,	beautiful example of its power: Mem. of Martyn, part 2. Oct. 20. p. 197.
Horrors,	of conscience, a powerful conception of: Shak. Rich. III. Clarence's Dream. under H. o.
Hiero,	of Syracuse, remarkable answer to, concerning the nature of God: Cicero de nat. [Deor. L. 1.
Hume & Finley,	their death compared, (powerful and beautiful, by Dr. Mason.) Panoplist v. 4. p. [241. & Ch. Magazine.
Indians,	Pequot, beautiful description of the war with: Trumb. Hist. Con. vol. 1. chap. 5. under I. i.
Importance,	of Christianity to the world: Butler's Anal. p. 155.
Jews,	some black found in India: Buchanan's Res. p. 255. J. e.
Jesuit,	missions, glowing and partial description of: Chateaub. Beaut. Chris. book 4. p. 413.
Job,	the Book of, investigated: Lowth's Heb. Poet. Lect. 33 & 34.
Knowledge,	no power to sanctify the heart, (good) Bp. Atterbury's Ser. vol. 2. ser. 2.
Ledyard,	his beautiful eulogy on women: Am. Quart. Rev. vol. 3. p. 103.
Languages,	origin of, mod. European: Schlegel's Lect. v. 1. p. 273.
Memory,	remarkable example of in a painter: Abercrombie's Intel. Pow. p. 112.
Morality,	of deism, fair specimen of: Buck's Works, v. 5. p. 256.
Niagara,	falls, short and good description of, by Beecher: Ch. Spec. vol. 3. p. 463.
Novels,	proof of degeneracy in religion: Wilberforce's View, p. 230.
Original,	languages, use, and best mode of studying: Diss. Trans. by Stuart, & notes, (good.)
Ode,	the Hebrew, great beauty of: Lowth's Heb. Poet. Lect. 25.
Press,	method of correcting the proofs of: Bigelow's Tech. p. 64.
Parable,	of Jotham, Judg. 9. 15. delightful exposition of: Stuart's Heb. Chrestom. p. 234.
Princess,	Charlotte, sermon on her death, (sublime and eloquent) Hall's Works, vol. 1. p. 179.
Questions,	for thought and study: Appendix to this Book, p. 25.
Reflections,	on the results of the Infidelity of France: Dick on Imp. Soc. p. 439.
Rosseau,	morbid imagination of: Stewart on the Mind, v. 1. p. 277.
Religion,	christian, short and unanswerable arguments for: Leslie's Deism, *passim*.

SEIGE,	of Jerusalem by the crusaders, awfully cruel and bloody: James' Hist. Crus. p. 170.
SABBATH,	common modes of unhallowing: Wilberforce's View, p. 123.
"	probably lost during the bondage of Egypt: Wilson on Sab. p. 116.
SOCRATES' &	Christ's doctrines compared, (weak and puerile) Jeff. Writ. v. 3. p. 507.
TOOKE,	John—frugality while a student: Am. Quart. Rev. vol. 5. p. 391.
TRIFLING,	a most beautiful specimen of: Cowp. Corres. p. 171. dat. Nov. 30, 1783.
UNITY,	of the God-head, fine argument for: Yates' Vindication, p. 58.
UNIVERSAL,	salvation, Lectures, condensed and good: Appleton's Lects. Lect. 21, 22, 23. Edwards against Chauncey, passim; (unanswerable.)
VARRO,	beautiful Letter to, from Cicero: Cic. Epist. Lib. 9. Ep. 2.
VOLUPTATE,	et temperantiâ de, Socratatis disputatio: Xen. Memorab. Lib. 3. cap 1.
WORLD,	to be renewed and its material parts to be immortal: Chalmers' Sermons, ser. 7.
WILBERFORCE,	character as a speaker: Port. Rhet. Reader, p. 250.
XYLOCHARTION,	or bark-paper, description of: Am. Quart. Rev. Vol. 2.
YOUNG,	men, importance of: Hawes' Lect. Lect. 1.
ZALEUCUS,	his propitiation for the adultery of his son: Fuller's Works, vol. 2. p. 808.

I have here copied at random one or more specimens under each letter. The selection might, of course, be carried to a much greater extent, but these examples are sufficient to shew the design and method of using this Index. No language can describe the value of such an Index, after it has been growing under the hand of a diligent student for some years. To such I now commend it, hoping and believing that they will find it answering its sole design, which is, to aid them in preparing for usefulness. At the close of the Index is an Appendix which can be used as each one pleases; perhaps for the purpose of recording such facts as are not likely to be met with again.

Northampton, Dec. 1, 1833.

L. L. L. on the Honey Bee.

Bee
Melissa
Apis
Abeille

I shall use the Greek, Latin, English and other terms from Modern Languages so as to obtain room for various remarks.

A Page 11 –

Ar. Swarms –

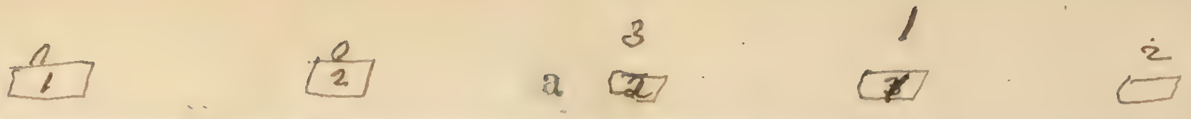
in July – ~~proceed as before~~ – take out bars – without bees – set the hive containing them in the place of a strong stock to be reduced – when it has obtained enough bees for a good swarm – carry it to a dark place to be shut up as before – replace the old hive – such late formed swarms must be fed of course – whether they are worth the trouble and expense of making them – will depend upon circumstances – the rapidity with wh. it is desirable to increase our Apiary – the demand for new colonies &c &c The wonderfully rapid multiplicat° of colonies in favorable latitudes – shows that if things are propitious there is in the nature of the bee a foundat° for very rapid increase – in our climate of brief summers and short supplies we may by artificial means attain to something like the same results – Fr. what I have said elsewhere it will be seen that such a rapid increase of colonies is not in our climate compatible with large honey harvests –

Where there is abundance of late food – buckwheat &c – doubled or strengthened stocks will give the good honey early in the season – then the colonies may be made to give each an artificial swarm – say in July when the good honey is gathered – they will need some feeding at first to encourage breeding &c but will be able to provide their main supplies from fall feed – This is an admirable plan for obtaining the largest amount of pure honey and yet rapidly multiply colonies – Two good stocks are made to produce one for honey gathering – the old ones may yield something – ~~then later each of~~ – as early swarming is to be discouraged – then a later one is to be got from each of the three thus trebling the colonies in a year – Of course Queens should must be kept on hand – This may be called Langstroth's plan for rapidly multiplying colonies and yet securing ~~the~~ the surplus store of the prime white clover honey – If feeding is resorted to the same thing may be done where the fall food is not abundant –

May 11th 12 strong stocks. 12+6 = 18 – clover gathering. 18+9 = 27 – Buckwheat gathering.

May 8th – 1857/ Remove an old stock to catch up when enough caught shut up ~~old stock~~ Send A. S. – to be sent away and replace old stock – or make one A. S. from two old stocks moved – by putting A. S. in dark place or shutting up – so as to put it when bees have their activity again in Spring – 12th – Put first swarm near old stocks – in a week move old stocks when all young sealed – catch many for the new swarms –

1A



Plan for Farmers — No 1 — deprived of bees — by smoking off — or by driving with a little ray smoke from below — all 1 bees are if possible to be obtained in 3 — done when bees are out fully gathering — 1, is then to be set in place of two — after its combs have been examined and all Queen cells (if there are any) but one removed — 2 — is put in a new place — 3 — will make a strong swarm — 1, will be a powerful colony for honey making — it will have a young Queen — and will not swarm — 2, having lost a large number of its bees will be likely to kill off its drones — and not swarm — and will recruit to be a large honey gatherer — If there are late supplies before 1 drones are killed off let 1 same plan be followed except that 3 should have half of 1 combs from 1. — Let 12 = old stocks = $12+6=18$ = stocks for gathering surplus honey from clover — (3 ought to have say 4 combs from 1 — bees are driven into a box) ÷ 18 = stocks in July = $18+9=27$ = stocks at 1 end of 1 year — this may be done in buckwheat regions and yet large quantities of pure honey may be gathered — and no feeding ordinarily be needed — Of all 1 modes for artificial swarming 1 simplest and best — requires no rearing of artificial Queens — and but very little trouble — Does away with swarming almost entirely — If more rapid multiplication is desired of course A. Q. — and feeding will be necessary — End. Contrast Begin

Theory 16 = strong stocks. Fertile Queens on hand for A. S. — Beginning

1st of May — $16+8=24$ } No honey to be taken — Each Queenless A. S. to
15th " $24+12=36$ } !!! be at once furnished with fertile Queen — except
1st June $36+18=54$ } !!! those last made — or at least to have a young Queen
15 June $54+27=81$ } nearly hatched — Buckwheat calculated for last —
1st July $81+40=121$ } Half of 1 combs always transferred —

or

16 = strong stocks
1st of May — $16+8=24$
15th — $16+\frac{16}{2}(+8)=32$
1st June $16+8+\frac{16+8}{2}+8=44$
15th June

16 = strong stocks
1st of May $16+8=24$
15 " $24+8=32$
1st June $32+12=44$
15 June $44+16=60$
15 July $60+30=90$

This plan allows 1 hives which are furnished with A. Q. young — four weeks to recruit before they are moved — The increase may be secured in good seasons and good locations —

If no A. Q. are used = 16
$16+8=24$
$16+8+8=32$
$16+8+8+8=40$

$16+8+8+8+8=48$
$48+24=72$ } Stocks only 2 not moved —

Atheists. Eloquent apostrophe to. (R. Hall. Vol 1. P. 48)

Anger of Bees. "I do not remember to have seen it noticed by any writer — that bees never make an attack when they are gorged with honey — and yet a knowledge of this fact is the foundation of many important points in their management. —

Bees when they swarm fill themselves with honey and this is the reason why at this time they are generally so peaceable — If any operation is to be performed upon bees wh. will be likely to irritate them — they may be kept peaceable by sprinkling them with honey or sugar water — a bee can ~~never~~ no more resist the temptation to fill itself with liquid sweets than a miser 'd be indifferent to showers of gold. — Allow them time to eat their full and they will be as harmless as flies — unless they are seized — Many persons are amazed to see a skilful operator take a hive to pieces and transfer the bees to another hive with scarcely a single sting — but as soon as the bees begin to lick up the running honey they lose all disposition to act on the offensive — Whenever honey is taken from them in boxes or glasses — ~~they~~ the bees in these will fill themselves as soon as they perceive that they are separated from the hive — wait until they have done this — and run over the comb to find a place of escape — then allow them to leave and they will fly directly to their hives without even attempting to sting — In this way a whole apiary may daily be deprived of surplus honey and not a single sting be received — if the proper precautions are taken — Raising up the boxes and exposing the bees to the light if it is done gently without any jar — seems to take the bees so much by surprise that they are not disposed to make an attack — I have noticed that bees never make an attack away from their homes — they are anxious to escape if attacked and will only sting if they are taken hold of — Natural Philosophers — freezing of water — May we not refer to this fact in the natural history of the bee as a proof of a superintending providence — What w'd become of a country if bees were as easily provoked away from their homes as they are when protecting their homes? The farmer w'd have to clothe himself and his cattle in a bee-proof dress —* (Next page)

Age of bees. It is supposed that when they are not taxed by work - they will live much longer than at other times - that few die in winter - of old age - but of exposure to cold and ~~weather~~ of disease - If this is so the importance of hives well protected against cold - will be very great - if many more bees will survive the winter - the many deaths occur in winter then are not natural - but the result of exposure and disease -

and the same diligence will have to be given to acclimate bees as has been given to acclimate vines and figs - - It has been observed that if the entrance to a hive is shut the bees returning from the fields will not make an attack - but seem to be bewildered - Hives may thus be closed when thousands of bees are on the wing and moved with entire impunity - If hives are moved a little distance from their usual position - the bees are confused and are much less disposed to resent any liberties taken with them - This ought ~~always~~ usually to be done when any serious operation is to be performed upon them - The attentive reader will see how necessary a correct knowledge of their habits is to their easy and successful management - If he does not feel interest enough to obtain such knowledge I would advise him to have nothing to do with their management or else he go back to the old plan of taking up the bees by sulphur -

Curious! It is said that bees, wasps &c will not sting so long as you hold your breath - that they seem to be unable to penetrate with their stings!!! To me very doubtful -

A i

Vol. 7. P. 22

Ability. sinner's to do his duty — true method of preaching. Chr. Spec.

Artificial Swarms. A knowledge of the best way to multiply colonies by Ar. Swarmg indispensable. The discoveries of Huber and others laid a foundan for Ar. Swarmg — but for the last half century no advances have been made until of late — nothing can be done in this way without barred hives —

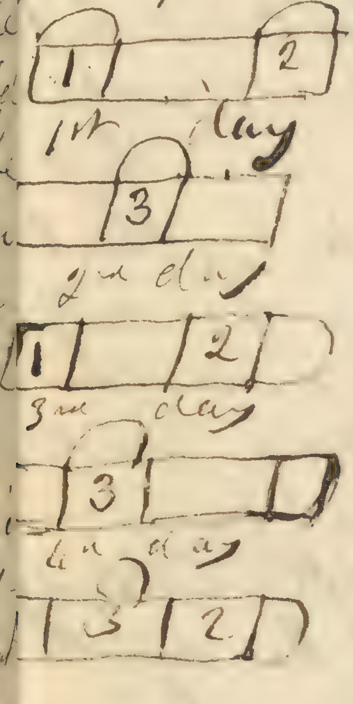
Aristotle — History of insects Book 5th — The opinion of some in his time was that the "King" was a female — 1 drones males — He notices that drones were produced in hives without a Queen but not workers! A kind of bees called robbers or thieves — black — broad bellies — That some contract their entrances to keep 1 drones out — that dry weather is most favorable for honey — wet for swarms — that honey requires time to thicken it — about 20 days — That the eggs of a drone or worker alike — That bees eat 1 worms if injured — that 1 worm leaves a deposit — [illegible] it is by no means a mere copier — ~~he has~~

Feb. 21st 1812 — Take half the combs from a well stocked hive — and all of the bees — place 1 new hive on 1 stand of 1 old one — place at once 1 old one on 1 stand of another good stock moved — In this way a powerful swarm obtained and no risque of any contention — The colony with half full of comb ought to have a young Queen given to them — if none are in a state of forwardness in their cells — The old colony transposed will not probably swarm — and in this way the three stocks will all be honey producers — (23rd) Take half of 1 comb with the bees shaken off — for 1 hive to be put in place of a strong stock — or — Take all 1 bees with half of 1 comb partial — and then take part of 1 comb from 1 transposed stock with its bees — for No 2 — or all of 1 bees with only two or three combs for 1 new one — and 1 hive with rest of comb for No 2 — This will require but one hive to be opened — These methods ought to be tested to ascertain relative merits. ~~That which takes the~~

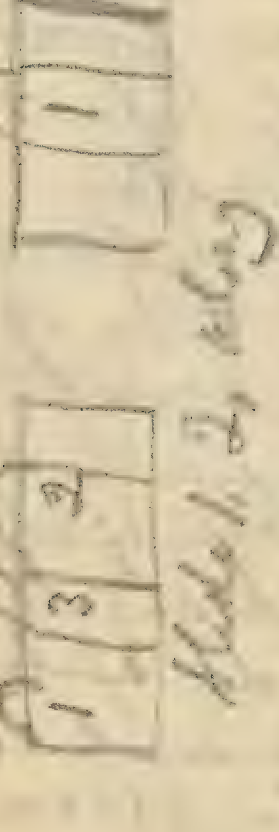
Air – Put in old racks – [illegible] – see Report of American Beekeepers [illegible] in Bee Journal – see my Journal – Dec 16th 1865 – Alighting Board of Cols – See Ca –

mode of forming Ar. Swarms –

Spring position

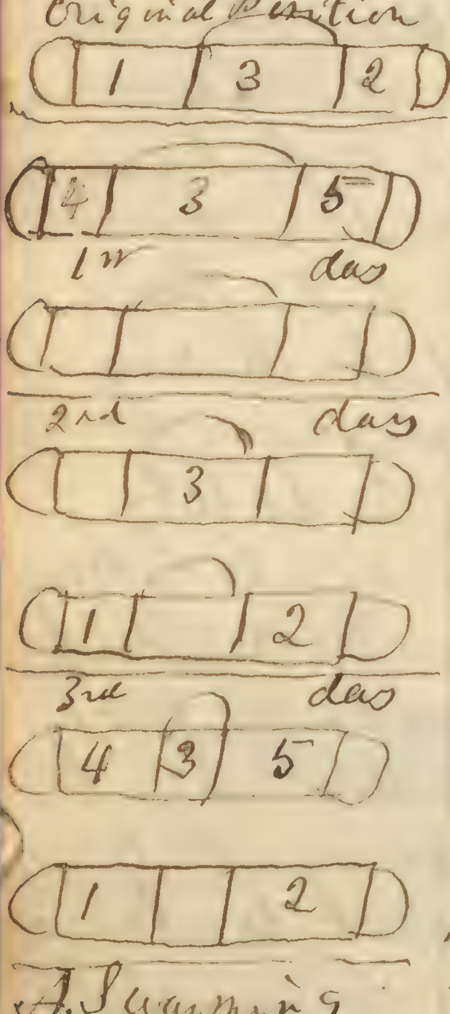


In the Spring have a stand for three hives – place on it two swarms – should be placed there the preceding Fall – and in such a gradual way as not to lose any bees. 1 and 2 – are those hives. At the proper time take from 1, 2 – three combs from each – 2 of brood 1 of honey or 2 from each – 1 brood – 1 honey – Remove 1, 2 – from the stand to a little distance – set up 3 with the combs taken from the other two – when you judge that you have got enough bees to make a very large colony – shut up 1, and 2 – next day replace 1, 2 – and open – remove from the stand 3 – shut up – giving it water – 3rd day – replace 3 – opening it – remove 1, 2 – shut up – give water – 4th day replace 1, 2 – open all – It may not be necessary after the 1st day to remove the hives from their stand – If one or two swarms – then comb to be taken from the one that does not swarm – and that to be moved 3 To be relied upon for surplus honey – Stalled swarms always to be relied on for surplus ~~swarms~~ honey – The hives must not be weakened so much that they cannot nurse the brood – In two weeks or less – they will be in readiness to form another swarm each

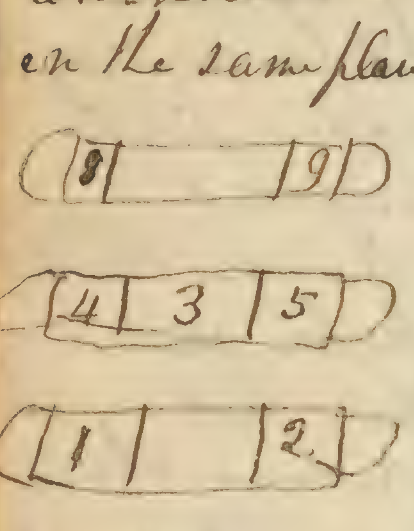


Oct 1/6 –

Art. Swarms



A. Swarming continued—on the same plan



the number of A. Swarms will depend upon the productness of the season food supplied

~~If~~ When 1, 2 are increased enough to form another Swarm—Remove them from the Stand—take combs from them for 4, 5—and set 4, 5 in their places—when enough bees have left 1, 2—shut them up with water—next day remove 4, 5—shut up with water—replace 1, 2 and open—see that they do not enter 3— 3rd day open 4, 5—shut up 1, 2 with water—~~If~~ next day open all. If they do not seem to be familiar with their new homes—the alternate shutting and opening may require to be continued longer. If their whole position has been slightly altered are fed when opened a little at the mouth of the hive so as to excite them to active flying—they will become accustomed the earlier to their new place—as bees communicate on the wing—In no case should we devolve upon them (if we mean to rely upon them for stock hives) the work of raising Queens from the egg or young worm—as they will lose so much time that before the young Queens ~~eggs are young~~ brood are mature—they will have become so much reduced in numbers as not to be able to take care of all her eggs—and nothing but vexation will be the result. They should if possible be furnished with laying Queens—especially the one first made and from which the honey harvest is to be expected—If laying Queens cannot be had—etc. Queens sealed and almost ready to emerge must be given—

This shifting plan may be tried side by side with the plan of making up a swarm from a number of hives—

Ar. Swarms

If the season is not a productive one in honey— numerous Ar. Swarms may be produced by liberal feeding— If we multiply greatly our colonies either by natural or artificial swarming in any season we cannot expect large honey harvests— Great amounts of honey are to be obtained from extra large colonies— but if they are new colonies they will always do more work than an equal number of bees in a non-swarming hive— Very early swarms whether Nat. or Ar. ought to have comb and honey in their new hive— Doubling early Nat. swarms a very good plan to obtain large amounts of honey— but one of the Queens ought to be caught to be used for another swarm.

Early breeding.

This is all important in any system of management— There can be no great success without it. It can only be promoted by having large, healthy stocks in the Fall and keeping them in hives which preserve them warm— dry and clean in the winter—

Premature-

There may be such a thing as premature breeding— this more apt to occur in thin hives— which feel any unreasonable warmth of the weather more than hives properly protected— Such brood often perishes in the sudden changes of the weather, leaving the hive far worse than if they had not begun to breed.

Ar. Swarms. If any hive swarms naturally then the young Queens when sealed may be taken all but one — to make Ar. Swarms —

Young Queens how preserved — If taken away and placed on the [illegible] under tumblers — gauze wire might prevent the Queens from destroying each other — and yet allow heat from the hive to mature them — gauze wire might allow bees to enter and yet be too fine for Queens to pass through —

Ar. Swarms — By sliding the hives along may they not be formed with the greatest facility — A sheet or a suitable cover of a different color from the hive sh'd be put on the hive shut up the better to deceive the bees —

Quarreling — to prevent if hives are moved and different colonies are to be united some recommend to keep the hive shut until a very large number of the strange bees are collected outside — to feed them without and then allow them to enter — When bees come home loaded and attempt to enter the hive placed on their stand I have observed that they are seldom killed — also that a new swarm seldom kills those added in this way —

Ar. Swarms for sale — If swarms are to be disposed of or carried some distance say 2 or 3 miles from the Apiary — by having spare Queens on hand — hatched or unhatched — swarms may be supplied to order at any time in the working season — A few combs may be taken say one or two from a hive — and bees may be taken from a number of hives — by lifting out the bars and brushing them into a box or empty hive — Let the bees remain on the bars and shut them up at once in the hive into which they are inserted — towards dusk shake out the bees from the box in front of this hive — and they will readily ascend — shut them up and remove them next day — If no Queen can be given them — and there is no drone brood — or drones — if removed when no drones are near the fecundation of a young queen cannot be relied on — In this way a very large number of swarms can be made — A sufficient number of combs and bees for a swarm might at once be transferred — As soon as a comb is taken out of a hive the bees upon will begin to fill themselves with honey — the comb sh'd be placed in the new hive before they begin to fly — Bees gorged with honey are not [illegible] — hence they may be taken from any different hives — If there are not enough bees the hive towards sunset might be set for a few minutes on the stand of a populous one —

Ar. Swarms — From some experiments of my own and others I think that if bees are confined in a dark place about 48 hours and then put in a new locat° they will most of them adhere to this new place — Should further experiments prove that this is so then it may be made the foundat° of a new and improved system of Ar. Swarming — The new swarms formed as mentioned on the previous page might be put into a dark cellar — with a supply in their hive and water feeder — and kept there till about sun-set of the third day then let them be brought out and set as far from the old stocks as may be convenient, and by offering them honey (if necessary) let them be excited to fly — If as I suppose almost all of them will re-enter their new habitation and make contentedly there, this with my improved hives will be found an exceedingly easy and rapid method of multiplying colonies — by the experienced and fearless Apiarian — By taking only a small amount of comb and bees from any one hive at once it will be encouraged to renewed activity — We may begin say middle of April or 1st of May according to latitude and season — *Let this system be united with moderate feeding at night about enough to compensate the bees for their loss of comb and workers — and the number of new colonies which may be attained will be surprising — Even if a very considerable number of the bees should return to their old homes enough will remain with the young hatched and hatching in the combs to make vigorous stocks — I should on this plan put about six combs in each hive — The method will then succeed even if the bees are compelled to rear a new Queen from the egg — but they ought by all means to be furnished with a Queen nearly mature — if they could be supplied with fertile ones so much the better — This system looks not to obtaining in any season when it is practiced the largest amount of honey but the largest number of vigorous swarms — The increase of colonies by natural swarming is so slow and uncertain — that if there should be a large demand for bees it could not in this way be supplied — I think that on this plan I could easily multiply colonies four or five fold in seasons and locations ordinarily favorable — * If when we are pursuing this plan of multiplying colonies the bees can gather enough to replace the combs taken from them, it will be best not to feed as the less spare honey they have the more room will there be for brood and of course the more rapid will be the increase of the bees — but then it will be necessary to feed in the Fall unless the [illegible] natural supplies from buckwheat &c are very abundant — By this plan the very [illegible] struction of colonies combs may be found not at all to interfere with the strength [illegible] economical of the colonies from which they are taken — As soon as the natural supplies begin to fail strong colonies may be deprived of many of their bees not only without any loss but with a positive gain — as the number of consumers is then diminished when consumption is in excess of production — To form colonies say early in August or later [illegible]

22

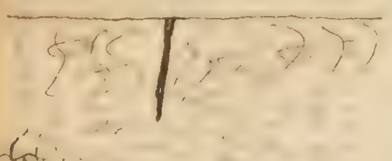
Page 2 — over 10

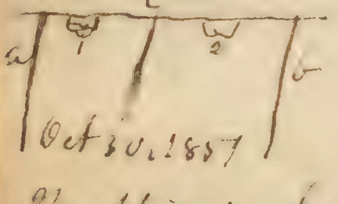
B Bees – See – B-i – Bo

a

Backsliding, _nature_, _symptoms_, and _effects_ of – means of _recovery_ from. (Fuller's works Vol. 2. P. 764.)

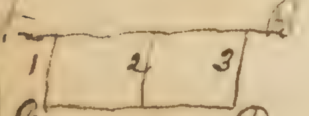
Bars or Slats. In the use of barred hives every thing will depend upon having the combs accurately fastened each to its proper slat – When the slats are long a small cross piece extending about half-way down will answer quite a good purpose.





Oct 30. 1857

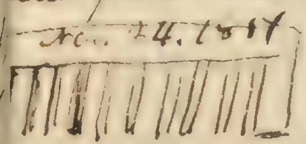
If the slats are made so that a, b are about 3/8 of an inch from the sides of the hive ~~and are as wide as~~ c – the whole comb may be taken out without at all disturbing it by cutting – If the Apiarian has some clean worker comb he shd fasten it as (1, 2.) if not he shd draw a thin line of wax along the centre of the bar – If every other bar can be furnished with guide comb it will answer every practical purpose.



AB shd be one inch wide 1/4 thick – 1, 2, 3, C D 3/4 inch wide – ~~If AB is not over 12 inches long 2 may be dispensed with~~ – Set C D about 3/8 of an inch from the bottom board – By the use of such a compound bar the removal of bars with comb brood or honey can easily be effected – With the ordinary bar the work of removal is always difficult and often impossible – and this is the reason why hives with bars notwithstanding all their theoretical advantages have been so little used – It is very obvious that the box or boxes for the storage of surplus honey may be furnished with these bars – and if bars are constantly removed during the height of the working season the bees will be stimulated to the greatest amount of activity – This ~~one~~ will be a most excellent way of taking the honey where honey in the comb can be retailed to advantage in a market near to the Apiary – The bars in the box for surplus honey shd be of the same size with those in the main hive and thus they may be used to great advantage for feeding destitute colonies and ~~and~~ for ~~making~~ artificial swarms – From these bars in such an upper box comb may be constantly taken to be used as guide comb – and to encourage the bees to begin the sooner in small boxes, tumblers &c – The use of this bar will I am persuaded give a new impetus to the easy and profitable management of bees – and render the making of artificial colonies an easy operation. By the

pound Bar or (See Oe & Oi) for Open Hive
veable Frame.

m the great ease with which the bars with their combs may be removed a command over the hole proceedings of the bees is obtained wh. is truly wonderful – If a hive is infested ith the larvae of the bee moth all the combs may be examined and cleansed in a short time o one unaccustomed to the scientific management of bees it wd appear to be a very formidable under-king to remove a bar with its comb full of bees – The timid and inexperienced ay use a bee-dress or resort to a little smoke – but this is generally quite unneces-y as the bees seem to be alarmed by the sudden introducn of light from above and by their unexpected removal from the hive – and usually begin to gorge themselves with honey – he ~~work of~~ removing the Queen by means of these bars is very easily accomplished – and this and all other operations may be performed without injuring a single bee – thus ving the Apiary from constant irritation and keeping the bees always peaceable – elf ~~will be~~ is obvious that the Movable Frames may be adapted to almost any hive – and that ey will be of the greatest practical benefit – By their use with the covered way the common box hive wd have the combs all surrounded by a stratum of air and wd be thus protected to a good degree fr. extremes of weather.

Nov. 24. 1851


The Compound bars or movable frames may in property suspended and yet the outside cover be movable with hinges, plates &c so as to show the frames without any cover – Such an arrangement wd be curious and might perhaps be attended with some practical results – The moth in such a hive wd stand but little chance – The tumbler board might form a fixed part of the cover – and the surplus honey might all be taken away at once – A very cheap hive on this plan might be made – it would not, however, be easy to replace the outside cover without killing some of the bees –

Nov. 25th – Dowels or pins put in the corners will avoid killing the bees – this props up the hive all around. Strips wh. will answer to keep warm may be ~~put~~ close three sides – Moth Traps and entrance [illegible] the front – bees – Brood Board – Divider – Covered way may all be used in this way. If the [illegible] is dispensed with the hive may be made very cheap – Such a hive will give [illegible] when a hive in wh. all the [illegible] may be investigated and without the many difficulties wh. attend the Huber Hive – The top of the cover being about 3/8 of an inch above the [illegible] covered way – and over this may cover the tumblers, boxes, &c or may contain movable frames for surplus honey – Such a hive wd give the bees far more protection than any ordinary hive from extremes of heat and cold – ~~and~~ as the combs wd not be attached to the sides of the hive – and wd protect them against moisture and moth –

Bee - In winter places a convex piece may be formed by a piece of cotton (which will much facilitate the bees in [illegible].

Beginner - Let the beginner commence with only a few swarms - so that his apiary may enlarge with his experience - He will be apt to succeed best - by sending one or two new hives to some one keeping bees to have good, [illegible] swarms placed in them - They sh'd be brought back of the same day on wh: they are hived and at once placed where they are to stand for the season - The care and observa° of these the first season will gradually accustom the learner to the habits of the bees - so that by the next season he will be prepared to perform all the necessary operations - If he buys old stocks he will be very apt to get poor ones - and he may be called upon for operations in advance of his knowledge and courage - (describe a beginner going through all the various operations of the season -)

arly Breeding. Upon this depends success in all the Northern and
Middle States— If the bees do not breed early they are
not prepared to take advantage of the blossoming of the fruit trees &c If they
warm at all they swarm late— and the new colony often fails—
The hives have much to do with early breeding— If by want of protection
gainst the cold or any other cause many bees are lost in the winter there
ill be too few bees to breed early— This the reason why so little realized
om bees— If a hive be thin of bees in the Fall it cannot be expected to breed
ly— hence the importance of having all hives well stocked with bees in the
Fall— This ought often to be secured by union— If the hives are too much
xposed ~~to the air~~ or too much air is admitted in chilly weather the young brood may per-
sh and this will prevent early breeding— and of course retard early swarming— when chilled
young brood perishes like eggs left too long by the hen—

Bee Bread— Young swarms are often quite deficient in this article and are
not able to breed early as fast as they otherwise would— Dzierzon speaks of bees
athering [illegible] in rye flour from the millers in pellets— If a substitute can be found
it would be of the greatest advantage— Save combs containing bee bread for spring use

[illegible] March 1862—

Breed of bees, how to improve the— The honey can get but little
from the red clover— It superabounds in honey—
they must [illegible] it— Why were they not made to gather from it?
(1) They might have been endowed with a proboscis to gather all the nec-
tar [illegible] their mandibles strong enough for this— Probably Providence [illegible]
have made them dependent upon our fruit— [illegible] made for man [illegible]
[illegible]— (2) [illegible] might have had [illegible] longer tongues— only a little longer
needed [illegible] there is a [illegible] of nature [illegible] of [illegible]
[illegible] capacity they cannot have [illegible] from [illegible]— [illegible]
not prepared for the bee to get into the red clover until we had the culture
of the [illegible] as we now have— Has not the time come then for an im-
proved race of bees to get honey from this plant? [illegible]
[illegible] that [illegible] in the [illegible] of the Divine arrangements? [illegible]

[illegible]

Bars – or frames – April 20th – 1852 – Try 1/4 inch from sides of hive – this will allow bees a free passage – When there are 12 bars in the main hive there ought to be only 9 or 10 in the upper box –
See Bee – /

As an object to be diligently aimed at – to so improve the breed of Italian bees, that they will forage abundantly upon the red clover – this may be done if we can get more size and strength in this bee or if we can obtain a longer proboscis – Prof. J. P. Kirtland of Cleveland Ohio has proposed to breed Italian bees upon one of the many islands of Lake Erie where there are no bees, and to [illegible] [illegible] bees to [illegible] them with his queens – If Mr Gray, Mr [illegible], [illegible] and a few others will see that he has the best queens and [illegible] we may in one or two years or a few years get what we want – As it seems that the size of the heads of animals is much more easily controlled by breeding than the hinder parts, we have theoretical [illegible] to get a bee to work at the [illegible] – [illegible] body [illegible] that the [illegible] did not [illegible] the [illegible] of the red I have concluded that it would not be [illegible] to [illegible] the red and cannot be made to supersede it – /

ep: 11th – 1852 –

Brick Hives – Let there be a platform with cellar space under it and holes communicating with it – Let the hives be built up on this – brick neatly pointed – if thought best they may be made double ith dead air space between – top frame for rabbets may be bedded down on the upper surface of the bricks in mortar – the cover to the hive may rest upon the same surface – A range of such hives might be built with out much expense – they might be warm in winter and cool in summer – Cd not a patent be taken out for such a mode of construction?

Bolingbroke, His sophistical reasonings ably exposed. (Burke. Vin. Nat. Soc.)

Body, neglect of ~~must~~ be detrimental to the spiritual interests of the soul. See some valuable thoughts upon this subject (Withington Xian Rad. P.19.)

Bee Books—

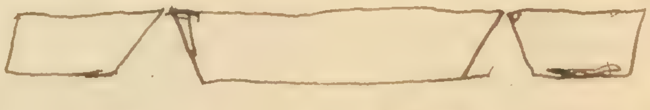
A very small manual of but little practical use— A tolerably full account of the habits and mode of increase of the bee indispensable to any successful management in improved hives—such a manual should be made interesting in order to secure the necessary enthusiasm— A book will in a few hours convey the knowledge that has only been attained by the efforts of able men for many centuries—

(Brood)— If hives in which there is a fertile Queen have combs filled with maturing brood taken away—and their place supplied with empty worker comb a large quantity of brood may thus be secured for strengthening other hives—

April 20. 1860 / Make the stand a part of the bottom board—not nailed on before hives reach their destination—[illegible] by 7 inches [illegible] 4—three pieces might be substituted with a [illegible] to [illegible] all [illegible]—

See Bo— next page—

Shows end view B.B. in place. This B.B. can be opened and shut to clean, remove bees & catch hunting bees— [illegible] in [illegible] place good to get bees into hive— better thus—



May 12th 1861—

If the hive is to stand in open air some pieces of old woollen cloth may be put over B.B.—which when it is shut the cracks are to be stopped— If in cellar, dark warm or damp—cracks are needed— To put one hive on top of another take off the B.B. of upper one— In cellar the B.B. may be let down— no danger where there is [illegible]—the less the bees heard the better—

May 19th 1858 –

Bottom Board – How to clean it o cold weather – See Bro –

Brood – When quite cold weather follows swarming the brood are apt to receive a fatal chill – hives must be well protected – Vide Cultivator vol 1847 –

Diseased brood – extensive injury from – Vide Cultivator 1847 – Dzierzon can give no remedy for "foul brood" –

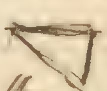
Warmth of Sun – Would not the taking off the cover and exposing the bees in my hives to the sun in pleasant spring days – aid in early breeding? The heat will do no harm to the combs as they are kept from the sides – {sun must not shine on single combs} the hives might be closed when full warmth to retain it – and the admission of air should be small – I believe in this plan – heat has a powerful effect in developing insect life – judicious admission of it, not too early in the season, must be of advantage – A well protected hive – in the ordinary way does not feel the early warmth so soon as a thin hive – when the changes are sudden and severe – this an advantage – but is it not sometimes the cause of late breeding – would not my plan secure all the advantages with none of the disadvantages of either?

Box – Made out of square to let the Bottom board slant and save leaks –

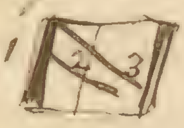
Brood capping of – May 19th Observed that the brood cells when viewed through a microscope – had minute holes – do they not answer to let in air to the young – its lining Cocoon – does not exclude air –

April 1. 1851

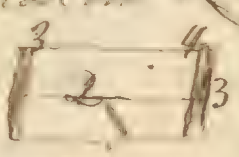
Bottom board – A deep B.B. may be made as follows (some plan [illegible] used by me in 1850 –) Nail a [illegible] under front thickness of hive sides [illegible] [illegible] [illegible] out 1" for [illegible] [illegible] [illegible] plan for [illegible] [illegible] – Let these pieces be bevelled on their inside edges to fit the bottom



– Let B.B. be



2 longer [illegible] – [illegible] [illegible] be ~~[illegible]~~ 1/15" [illegible] than the [illegible].



Let dimensions [illegible] dimensions of hive – Let 3, 4 be [illegible] [illegible] [illegible] to hinge B.B. – so that it just comes up to level of sides of hive – These buttons are under front part of the back [illegible] [illegible] to hold B.B. up to its place – These buttons may be so that one side [illegible] [illegible] [illegible] [illegible] B.B. [illegible] [illegible] 1/8" [illegible] [illegible]

See 150 – further page

Buckwheat It seems now to be very generally admitted among scientific agriculturists that this is one of 1 most profitable crops - and that it is not as has been supposed such an exhausting crop - Although the honey is not of 1 first quality for table use - still it is often gathered in such large quantities as to be of inestimable advantage to 1 bees - Late swarms which without this wd not have gathered enough to winter them - will often fill their hives in a fortnight if 1 weather is favorable - Unfortunately in some seasons from drouth or other causes it will be almost worthless for 1 bees - Hives which admit of easy transportaton may be carried where 1 bees can have access to buckwheat and thus flourish - when if they remained at home they might perish unless fed - Every Apiarian shd do all in his power to encourage the cultivation of buckwheat.

May 19th - 1868 —

Bottom Board - How to clean in cold weather — Have felt increasingly the importance of being able to clean bottom board of dead bees in the Spring - without opening hives - This requires good weather - a slow operation - in a large apiary must [illegible] too many stocks too long - Movable strip B.B - as used in my first patent does [illegible] - too expensive - too difficult to make so perfect as not to warp [illegible] - difficult to transport bees in &c Last week devised a plan which meets all requirements — Make B.B. as in present style of hive in my own Apiary with [illegible] - on which lay for winter strips 1/2" thick [illegible] between them [illegible] 1/3' [illegible] honey & B.B - Inside of ventilator put wooden [illegible] - close up against tops bottoms of frames so that bees can easily pass up and down - a simple rod or handle might be pushed under frames - so as to be easily removed - By drawing or if desirable removing back ventilator admirable access to get to B.B - blow smoke to keep bees up - and with stick [illegible] remove in a few moments all dead bees - &c If hive doubled - have back doubling in two pieces so that lower piece (about as wide as ventilator) can be easily taken out - like back shutter over glass windows in back — Hive Bees at back ventilator so that they will enter more freely and will not stop at Portico — June 17th = The doubling back in two pieces - cut on a strong slant - two small nails or pins will hold it in place - Strips 7/8 x 1" resting on the pieces against which front and rear inside doubling pieces are nailed - will stay in place - and form just the proper supports to [illegible] the frames for winter - a [illegible] may be put under

Building up feeble colonies — If I have a fertile Queen I can give the small colony a frame containing maturing workers — when hatched result — the Queen has comb to lay in — and bees to take care of her eggs — in a few days a powerful swarm may in this way be made —

Have new feed entrance by which bees get up and down near to where they go in and out — and which will not at all interfere with cleaning out the hive. —

Charity xian. A hearty belief in y man's entire natural depravity shown to be its indispensable founda°. (Wilkinson xian Rad: P.134. 6)

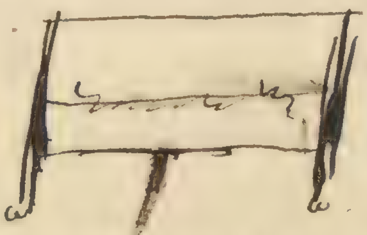
Canticles Argument for y divine author. of. (Pres. Edwards Works Vol. 9. P.342. 5)

Casts — or after swarms as generally managed almost worthless — They often weaken greatly the stocks from wh. they issue and unless quite early seldom gather enough to live over winter — If honey is y object with the Apiarian casting sh'd not be allowed — About y time that casts may be expected remove all y sealed Queen cells except one — (They may be put under tumbler-gauze wire allowing y heat of y hive to pass to them and thus as they hatch they are on hand for use) If they issue hive them and keep them until the Queens begin to lay — they may then towards dusk be returned to y hives fr. wh. they came — and their Queens used to replace old superannuated Queens — The new comb will be of y greatest possible use for tumblers, artificial swarms &c If y rapid increase of colonies is y main object — Casting sh'd not be discouraged — The casts sh'd be strengthened unless large and very early — by putting them into hives furnished with comb honey and bread —

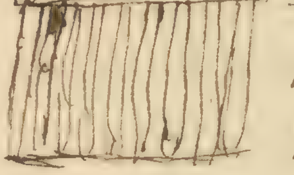
hanging bees fr. one hive to another - easily effected in hives with bars after my plan - Remove the hive fr. wh. they are to be taken a little distance. Put a ew hive in its place on a sheet as in hiving a new swarm - Take out the combs one by one llow the bees to fill themselves - gently shake or brush them off on to the sheet - If their queen is not taken fr. them they will readily ascend into the new hive - If some combs with oney, eggs and brood be put into the new hive - they will enter and stay without a Queen - hich they may be removed by driving - ~~and~~

hanging of place - Caution caution! Remove not so as to endanger

Jany 14th 1858 - Single Hive -



Front, back and ends inch - pieces on ends for rabbets inch - width doubled - outside pieces as in other hives nailed so as to present raw edge and to give support for cover - These hives may be put over the double protector - but little rain will get in - no matter in summer - in winter may have a board batten so as to form a roof and shed all rain - middle strip higher so as to slant bars each way - a. a. need not come out quite so far as B. B - and they will receive the board in winter to keep straw in place - - Corn-Cob alighting Board - March 25th 1868 - In lieu of spongy board in front of hive use cobs -

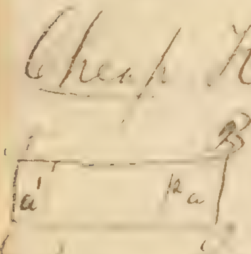


Cut them to length - hold them together y thin slats with nails - 1, 1. might be tacked to edge of portico floor - n wet weather much better than a board - 28th - Let two nails be fastened in outside edge of portico floor - between which cobs to be confined - their lower edges to rest on a board - with other nailed - one to be confined between nails - Might they not easily be held together with annealed wire? Unless mode of using them very simple - too much work -

C e

(Nov. 26. 1851)

Cheap Hive. Movable frames – cheaply supported – shape like figure – Even simple box – Dividers to separate spaces a, a, from the rest of the hive in winter. They might be taken out – bars or combs in a, a – in summer – Such a hive may have tumblers or boxes on top – It may be made cheap – and will give the operator a perfect control over his bees – A little smoke keeps the bees peaceable – drives them from the comb to be taken away – or into another hive. The worms that might spin in the corners of the movable comb easily destroyed – Hive examined, cleaned &c at all times with the greatest ease – A hive with a movable comb, and bars might in a few minutes be taken to pieces – put together again and all manner of experiments performed upon the bees, it is said – The exhibit of such a hive at Agricultural Exhibitions [illegible] by an experienced operator would do much to give it currency – (Nov. 27) If one side of the hive contained movable the comb might be slid off – without so much risque of annoying the bees – The top might be movable – the bars put in a rabbet – and the hive thus constructed will be cheap and have many advantages – ~~Ann~~ Movable bars – or frames the very foundation of all easy management –



If there are posts at A, B, C, D the sides AB, CD may be doubled – filled in with saw dust or some good non-conductor – dividers may be put in in winter – the entrance may be made by an alighting board under the bottom board wh. will stand on legs – the surplus honey might be taken from the ends of the main hives on bars – or from boxes over the top –

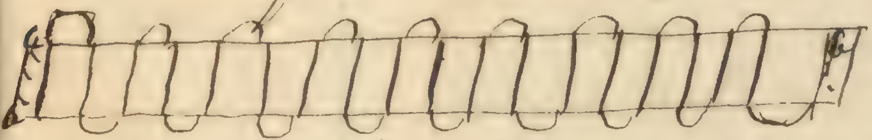
March 28th 1852 – Farmers hive – sides inch and a half – front and back one inch – pieces put in for dead air space – or tan, charcoal &c – Box halved – or nailed – or dovetailed – holes in tumbler board may be made by a common bit or auger – no rim – even bit of tin, and &c – Boards may be unplaned – and whitewashed – roof have strips to prevent leaking – Bottom board ought to be painted – Or made of inch – upper part 3/4 inch or inch and sides rabbeted – or boarded – 29th – Front and back – for say 3 hives nailed double in one piece – then cut – after box nailed sides may be doubled – corner pieces nailed on sides before box nailed – guide in putting together – hive may be made with plane, saw – hammer, nails –

Tumblers size of [illegible] D.a

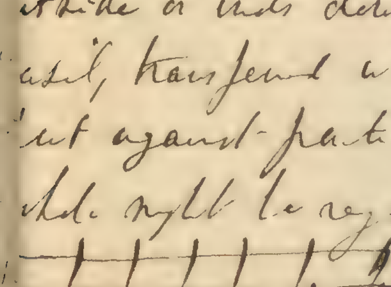
eaning-the hive- In the winter a piece of thin wood-gauze-paper &c so may e kept on the bottom board - so as to receive the dead bees-&c it can at any e be easily drawn out- or a small scraper can be put in to clean all out.-

une 8th-1852- Cheap hive - Front and back - 1½ stuff- sides inch- upper box- front and back inch- sides 1/2- Tumbler board-wire then et on and upper box set on-bottom board nailed to the lower box - from nd to end - this with the frames not inclining will form a very well protected hive (Jan 14th 1853) Strap on front so as to have convenient, and neat—

July 2nd-1852- Have cellar three feet deep- two above ground- one below or 1½ above- same below- may be built of brick with dead air space to exclude frost- Hives may be built say 10 or 12 in a compound hive-



a, a- entrance to cellar- a circulation through in Summer- shut to exclude frost in winter- small chimney to secure against smothering in winter from snow blocking up entrance tside or ends double- hives made of two inch plank- partitions inch stuff- May be asily transferred at any time to other hives- materials size of mine- If gauze wire ut against partitions bees will not be apt to quarrel with each other. then the hole might be regarded as a United States- July 3rd 1852- Double range-

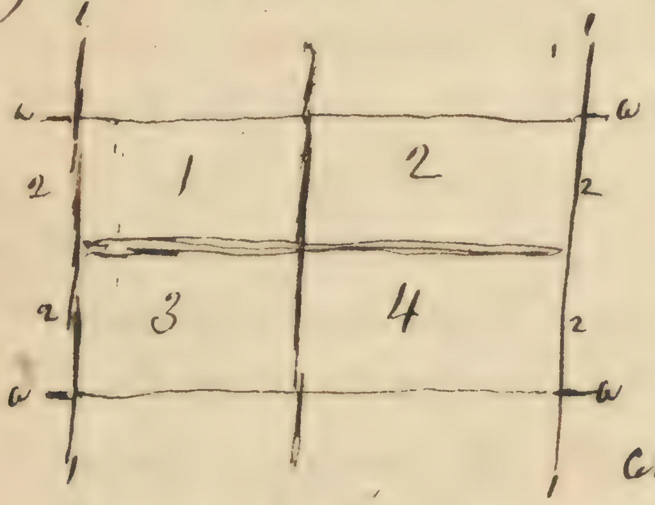


Have 12 in a double range- Traps may be colored differently so as to guide bees to their own hive- Top part- to cover the tumbler board need have no divisions- Canvass waterproof may be used to roll over this- or a board cover to lift on and off- In this way cheapness and protection both may be combined-

Clipping wings of Queens — Let the right pair of wings be clipped as soon as young Queens begin to lay — 2nd year part of the other pair — 3rd year the whole — age of Queen then known easily — where it is the intention to ascertain how long they will live — 1st year clip the anterior one of the right pair — 2nd year posterior — 3rd year — half of anterior of left pair — 4th year half of posterior 5th year whole of anterior of left pair — 6th whole of posterior — this might by clipping before cutting be carried through eight years —

June 2nd 52 — Clipping of wings will not prevent Queens from leaving hived in hives which do not suit them — yesterday one left — also again to day the same one — Can in a properly prepared bee garden be easily found — and bees made to go just when you want them — New system of swarming if they will swarm with clipped wings —

Jan.° 14th 1853) Four hives in one

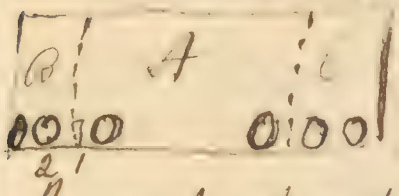


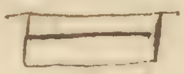
Fronts doubled — 1,1,1,1 are nailed 7/8 from end of B.B — so that outside pieces may be nailed on to come not quite up — so to give protection — and support cover — Roof of cover to slant both ways — cover to cleat either way and rest on roof of lighting board —

Such hives not to be moved about — saved space for them better than single hives — They might have windows on 2, 2, 2, 2 — Such hives over their protection [illegible] weather — would be most admirable as non-swarming honey gatherers —
as a, a, a need not project — nail outside on to edge of B.B — leave the raw edge for inside
Jan.° 17th A Quadruple hive will be too clumsy — two men cannot handle it — and on the whole it does not save so much — facing both ways has some objections — I incline therefore, to the single and double hives — (18th) A double hive cannot be moved by one person — and if two necessary they can as well handle a triple hive — There would be very great economy in time and material in constructing such a hive — also in protection — Perhaps a triple hive is as far as it is desirable to go —

March 30. 52

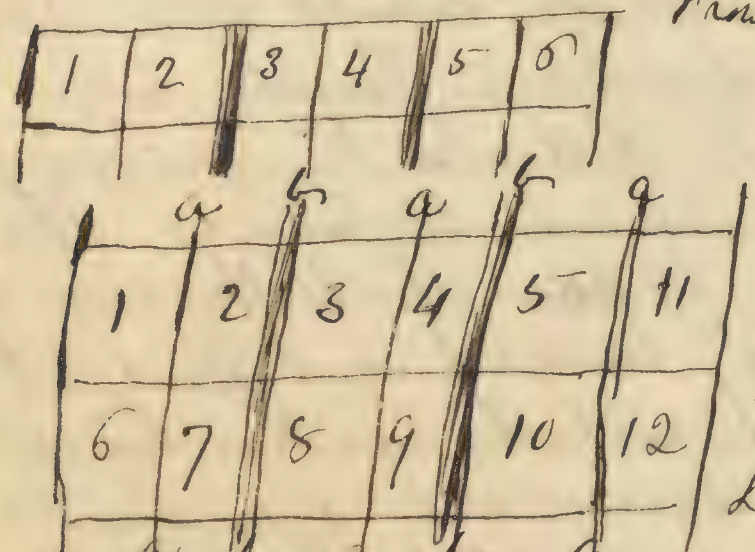
Collaterals – It remains to be proved by me whether the greatest amount of pure honey can be obtained by supering or in collaterals. Heat of the hive most felt in supering – good for glass – small [illegible] collaterals, if air admitted from dark apart. [illegible] at – main apart. B. C – collaterals. If holes admitting bees into collaterals are as in (1. 2) so that the Queen would have to pass over the cool draught – she would not be likely to leave the center part of the hive –

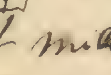




bars for side apartments – ought to be turned farther – if combs will be straight will be the best kind – A hive on this plan might contain 18 bars – 12 in center – 3 on each side – will yield the most honey of any plan – B and C – filled in winter with straw &c. Loose shallow starting box – Further board in three parts – only hole for feeder – Boxes might be put in side apartments – Space of each side apartment 3 1/2 inches

(Jan. 14th 1853 –) Cheap Compound Hives – Same as double farmers hives – Front and back inch – pieces for rabbets 7/8 –



Fronts and back inch board – ends same – middle half inch – pieces for rabbets 7/8 – nailed on – boxes to cover four hives – a. a partitions half inch – project up one inch – middle one the same projection – b b – 2 inches – ends 2 inches – boxes – slope of roof each way – rest on ends and on [illegible] – b b – cover on beveled roof of lighting board – elevate either way – blocks for middle ones –  – ... Further boards have little posts down into them so as not to set too close against middle partition – b b ought to be in one piece – also a-a – center divisions let in – also a, a – others nailed –

Cover for hive see Ca– Cover Covers for wintering of hives See Ca–
alighting board – See Ca–

Congregationalism objections to as a system of church govt. ingeniously stated (Spir. Desp. P.290. et in aliis locis.)

Comb-honey – Reasons for questioning the statement that in a few years it becomes unsuitable for breeding – Am acquainted with a Mr Fox of Germantown Pa. who has a hive now (May 1851) in its 16 year – Has always swarmed – is a strong and prosperous colony bees no smaller to my eye than others. Hive stand almost rotted away.

Any plan for renewing the comb which consists in furnishing two separate apartments for the Bees liable to entire failure – the box not ordinarily occupied almost sure to be stored with combs of a size unsuitable for breeding. Bevan's rule a good one. never to disturb the original habitation of the swarm so long as they are prospering. If sure that the comb is too old it may be cut out part at a time – or at a suitable season the whole swarm may be driven into another hive and their brood returned to them to be hatched. Query – Is not the lining made by the young brood so exceedingly fine that a very large number of them would not sensibly diminish the size of the cells?

Preserving – should be kept in a dark – away from moth – ought to be hung up – by a thread. Every piece of good comb should be most carefully saved.

[illegible] Comb Foundations—&c &c—

Cost of— Twenty lbs of honey thought to be required to make 1 lb of wax—

One pound of wax will store say 25 to 30 lbs of honey— 1 lb of honey makes wax to store 1 1/4 to 1 1/2 lb—

Brood Comb— Great advantage from having these combs of a hive regular and as many of them as possible of suitable size for rearing workers—Dzierzon says that Queens can lay drone eggs or worker at pleasure according to the kind of cells— The less drone comb the better— Hive with bars will encourage comb building of the most suitable kind—all containing drone or nearly all may be removed— I seriously doubt the ability of Queen to determine them at pleasure—

Comb-preserving. How would it answer to dip in an acid solution (strong saline solution) to preserve against moth—might afterwards be soaked in water.

Comb-making— New comb to put in the boxes, tumblers &c—of the greatest importance Every effort should be made to obtain it— Bars containing it without brood should often be removed to be used for this purpose. If any convenient way can be devised to guard it against the bee moth it will be of great importance to the apiarian. As it almost always contains eggs or young worms, it should for the moths be often examined and the worms destroyed before they have seriously injured it or have changed into moths to fill it with their ~~progeny~~ progeny— one pair will breed enough in a few weeks to destroy almost any amount of comb— So desirable is it to have an abundance of new comb—to be able to put a small piece in tumblers or boxes—or on the bars of a new hive—that it should be a regular business in an apiary to have a full supply of new comb—by constantly depriving some colonies of a part of their fresh comb—even if it is necessary to feed them largely to prevent them from being too much weakened by such deprivation— The common system of management makes no provision for securing such comb—it cannot be taken from the hives—and yet if honey is taken away in small receptacles—and others put in their place with only a small piece of comb for a beginning the bees instead of being discouraged as when large boxes are taken will at once go to work—and with increased diligence— Comb—Comb—plenty of new comb &c.

Church Government – Right degree of probability with wh. we are-
[illegible] & Presbyterian [illegible] of – complete certainty of the
leading doctrines of Christianity. [illegible] Evidences of Relig. p. 64

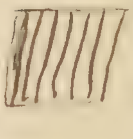
Comb in Tumblers. – If there is no store comb to put in the tumblers they ought to have a line of wax drawn lat over the center and down the sides – the tumblers being previously warmed to make it adhere strongly – In my hives, however, with movable frames there need be no difficulty in always having a supply of new comb on hand in the working season – I have found that when the comb is simply inserted into the tumbler the bees appear to be most active in repairing, and attaching it – as though they did not like such an insufficient job performed without making it all right – and when once they begin to work if honey is plenty they will seldom stop until they have filled the glasses – As glass is such a good conductor of heat it is important to have the tumblers well covered in order to economize as much as possible the heat necessary for comb building – When the weather is extremely hot the rapid [illegible] of heat will be of advantage to the bees – but as comb building is most actively carried on in the night the honey receptacles will seldom be too warm

Comb – fixing in frames – If possible cut it so that it sinks a little [illegible] bees will then make all right – this very good for old comb –

April 26th 1852 ~~Fill~~ Make holes in [illegible] board plain – cover with small square pieces of glass –

June 11th 1852 – Let bees make comb in tumblers from cheap food – before it is sealed put it to colonies that need – then give to strong stocks to store with best white ho ~~ton~~ Wax a secretion – pure honey makes good wax –

Comb — the melting of ~~[illegible]~~ gives out heat — if the weather is very hot and the hives are not properly protected

Comb — direction of — a strip of tin should be laid on the tops of frames  with suitable apertures — so that with a brush a number may be waxed at once —

Comb preserving — Have a small cask — spiggot — or plug — cover going inside to keep the comb under water — draw off occasionally and put in fresh water — wash comb to be used in fresh water —
April 24th Have been informed that comb smoked with sulphur will never be attacked by the bee moth — and that it is not disagreeable to the bees —
April 28th 1812 — If sulphur plan answers — make a box — ~~wire gauze~~ for comb suitable frames to set in it in layers — one above the other — have it so that sulphur will freely penetrate it — smoke from time to time — only chance of failure that bees may dislike the comb — Bees will not object to the comb — The ability to preserve every piece of comb one of the great advantages of the Mov. Frame System — Any old hive may have its comb smoked to make it suitable for bees —

Comb fastening in frames [illegible]
Jan 4th 1867 [illegible] have today devised what seems the best plan of all — Light Rubber Rings. Two of these spanning over top and bottom rails of frames will hold the combs admirably in place — until they are fastened by the bees! Then remove them to be used over and over again — This admirable at least for the nuclei frames — and to send with my small frames to contain for Italian queens.

Cells size of Italian and common—

D (May 10. 1860) Measured to day some Italian worker comb taken from the original queen in which Mr Parsons brought over the Italian bees— several very careful measurements gave about 19 cells to four inches— the same number of measurements gave 20 of the common or black bee— the bee must therefore be some larger— Intention to breed our queen bees in Italian comb—

(May 28th 1861) The Summer on the four outside sides of case must rest upon a staple— so that case will not set close on ledge— but leave 1/4" inside to prevent having bees caught to give more room— If case is made both about 1/2" larger 1/4" on every side— a staple may be put in to prevent bees from being crushed—

Corn Cobs for [illegible] of bees — 1 7 [illegible] —

Sep. 7th 1866 — In my journal [illegible] a [illegible] [illegible] be D

[illegible] for [illegible] [illegible] cobs — [illegible]

[illegible] the [illegible] of my Brother in law W. G. [illegible] the

[illegible] to fill the cells in proper [illegible] — Let the corn cobs be cut to suitable lengths [illegible]

[illegible] — then select them of nearly uniform size [illegible] — [illegible] a very

thin frame [illegible] to [illegible] [illegible] — [illegible]

on top of frame [illegible] them — bottom of frame might be [illegible]

3/8" to 1/2" — top of frame might be so as to [illegible] the [illegible]

frame [illegible] — In summer [illegible]

winter [illegible] make a [illegible] for them to be suspended [illegible] the

frame — If the frames were [illegible] — cobs might [illegible]

[illegible] the floor of the hive [illegible] clean cobs [illegible]

[illegible] bottom layer — then use [illegible]

[illegible] — [illegible]

Of all the materials for [illegible] bees [illegible] this would be for [illegible]

of summer [illegible] the bees in winter [illegible]

must admit [illegible] — [illegible] cobs (corn) [illegible]

very good [illegible]

against [illegible] purpose [illegible]

[illegible] against honey [illegible] — nor against bottom board — corn cobs will [illegible] this

[illegible] — use only white [illegible]

It seems [illegible] the [illegible]

before they [illegible]

[illegible] (See [illegible] 1861) [illegible] the great [illegible]

may be made [illegible] use of corn cobs for wintering bees — [illegible]

can be no doubt [illegible]

[illegible] — With corn cobs [illegible]

the winter [illegible]

[illegible] also —

with them [illegible] female [illegible] —

September 16th — [illegible]

[illegible] to [illegible] so as to [illegible]

[illegible] will just [illegible] corn cobs on [illegible]

[illegible] to [illegible] — [illegible]

[illegible]

Death, beautiful description of before decay. Byron's Giaour—

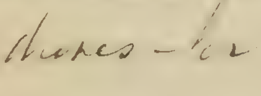
Depravity total, folly of urging inability from this source to do any thing good, as an objection to the attempt to become religious ably exposed by Howe. (Blessed. of righteous Chap. XVII.)

Decrees of God, presumptuous discussion of discouraged. (Leighton Vol 2. P.450. 1.)

Degenerating—or bees running out—This is not uncommon—may it not result from breeding in—keeping the same stock? Ought not new stocks to be obtained from time to time—give them plenty of drone comb and encourage drones—& raise your stock from them—

Deserting hive—bees do but little in filling in a hive when they mean from the start to desert it—Noticed their refusal to work in an expanded storey when they meant to desert it.

(by See De—next page)



To make this large enough to cover the frames—bee [illegible] feet to [illegible] to the top [illegible] to the bottom of the frames—frames forced in this way to be [illegible] so as to keep the way to the hive itself—If desired the honey board can be laid over the [illegible] kept [illegible] be in the frames [illegible] no [illegible] and no winter [illegible]—[illegible] Am I mistaken [illegible] wintering bees [illegible] as was made [illegible]—Mr D. Sprague, of [illegible] [illegible] the best [illegible] for wintering bees—[illegible] I think that [illegible] and enable us to winter bees [illegible] white [illegible] protect them better in summer—[illegible] bee-keeper—The [illegible]

[illegible] October 14th. To day [illegible]

[illegible]

A1

removing the top cover light and heat would cause them [illegible] to fly [illegible]

[illegible] from the closest [illegible] I can only [illegible] [illegible] to occur

to me (1st) [illegible] (at [illegible]) of preparing bees for wintering — I am for [illegible]

[illegible] [illegible] of [illegible] [illegible] [illegible]

in [illegible] together — 2nd Dead bees [illegible] [illegible] and [illegible] — the [illegible]

[illegible] is a cheap and successful [illegible] method of [illegible]

in cold [illegible] combs [illegible] — 3rd [illegible]

in cold weather — and bees will not be able to [illegible]

over the rough surface of the comb (4) [illegible] bees [illegible] the [illegible]

[illegible] from comb to comb — [illegible]

for when they contract from cold they [illegible] keep [illegible]

and [illegible] from the [illegible] to get [illegible] or [illegible]

[illegible] warmer and [illegible]

[illegible]

(5) Dead bees will collect on the [illegible] like bees [illegible]

be [illegible] — and cause the combs to [illegible] — they [illegible]

the bottom as they [illegible] — and [illegible]

[illegible] the [illegible] [illegible] These may be [illegible]

in the [illegible] I now suppose there is — [illegible]

[illegible] — October 17th — I have for several [illegible] mornings examined some

colonies [illegible] with [illegible] and side [illegible] — [illegible]

[illegible] the bees could be found on the outside surfaces of the two outside combs —

thus plainly showing that the disposition of bees to contract [illegible] in cold [illegible]

be counteracted by [illegible] of the sides of the hive [illegible] the front and rear [illegible]

[illegible] combs were attached to them then they might while contracting

do the same [illegible] the front or rear — [illegible] the side linings [illegible]

[illegible] the hive warmer — so that the [illegible]

[illegible] — then [illegible] the bees to keep up a [illegible]

[illegible] in the cluster [illegible]

[illegible] that the [illegible] of [illegible]

[illegible] by the [illegible] — the [illegible]

colonies can be safely wintered — and [illegible] the bees [illegible]

and [illegible] — very little [illegible]

to the [illegible] of the hive — Perhaps no better plan can be [illegible] for covering the

top of the frames — [illegible]

[illegible] to [illegible] the [illegible]

[illegible]

[illegible]

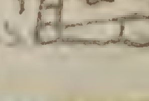
[illegible] — By a very simple plan the non-conducting power of the [illegible]

[illegible]

[illegible] the bottom boards next to the front — [illegible] of clean straw cut to a proper length on the bottom board — covering the lengths of the straw) for that to rest upon which [illegible] the rest of the cost which [illegible] keep the straw in place! the same might be done upon the sides — the tops of especially [illegible] the flooring under the cobs might be cotton too — Some or [illegible] the form of bottom — [illegible] in the shape of old carpets or old clothes might also be used in the same [illegible] — and might be tacked to the front and rear also — In short the principle may be so fully carried out as to secure a hive which will enclose the bees on every side, with the almost perfect non conducting substances — and yet allow of a free escape of any moisture — I [illegible] one or more hives in which the plan shall be carried out as completely as possible. — [illegible] a stock breed any earlier in such a hive? at [illegible] stock [illegible] breed earlier [illegible] it would in one instead of any weak stock [illegible] — a strong stock would probably breed very little if [illegible] /

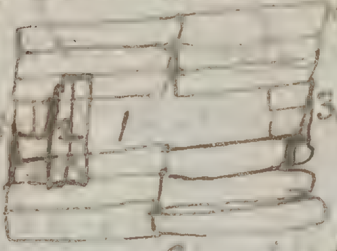
N.B. Have put some bees into cob hives — Drove long nails inside of the outer ledge of platform to hold the cobs on top of frames in place — [illegible] sides above the side cobs easily closed with these cobs — there will probably be no [illegible] in covering the top cobs with woolen garments — [illegible] the bees in cold weather easily [illegible] the cobs — In the [illegible] pieces of old clothes [illegible] the front [illegible] the hive — I should now prefer to winter my bees in a hive [illegible] keeping [illegible] receptacle — (19th) 30° — Heavy frost — In a colony the [illegible] considerably under the top cobs — the very strong stock [illegible] the bees [illegible] next to the outside cob [illegible] bees [illegible] enough to keep out of the [illegible] — I [illegible] a cluster [illegible] below [illegible] that bees do not like to lie or cluster upon them? (20th) 28° — Very heavy frost — Examined a number of cob lined hives — [illegible] a bee under the cobs on top of frames — some under woolen [illegible] in some hives none on the outside frames next to the cobs — in the strongest [illegible] — In one with [illegible] both sides next to the cobs — In strong one with a [illegible] between cloth and top — [illegible] very [illegible] — I find after cobbing a hive that the platform is [illegible] [illegible] (leaving one empty cobbed hive) [illegible] the hive — Chaff — I think that it will be an admirable plan to [illegible] a bed of chaff upon which to place the cobs — [illegible] a very great additional non-conducting power to the cob platform [illegible]

[illegible] surface [illegible] dispensing with the use of winter passage in combs — [illegible]
[illegible] winter passage — while to [illegible] the [illegible] the [illegible]
[illegible] not necessary to keep any all the [illegible] of honey [illegible] over the heads [illegible]
[illegible] hope [illegible] to [illegible] have [illegible]
[illegible] the [illegible] of the heads to the [illegible] — [illegible]
[illegible] cols [illegible] — In arranging the [illegible]
for winter — I prefer to have the three central frames not very much [illegible]
[illegible] combs — then on each side of these [illegible] — the [illegible]
[illegible] — If the central frames are too far [illegible] the [illegible]
and they will often pass to one side — (21st) Have put a layer of chaff under the cols in one
hive — it raises the cols so high that the cols [illegible] the [illegible]
[illegible] must be higher — [illegible] for a few hives [illegible]
[illegible] a few with only top cols — If the moisture [illegible]
into the platform [illegible] be bad [illegible] — the [illegible] in my hives
[illegible] is not necessary to use outside of the hive — [illegible]
[illegible] of the hives are all warm — [illegible]
[illegible]
chaff [illegible] — (22nd) 36°. 47° — Ground white with snow — In one colony [illegible]
only moderately strong with a cap laid on cols over the frames — bees clustered under the comb
and a small cluster outside [illegible] — In a very strong colony [illegible] with cap
on cols laid [illegible] out of [illegible]
[illegible] clustered [illegible] against the comb nearly the whole size of the comb — [illegible] with top
caps — [illegible] has been [illegible] next to cols — [illegible] of the strongest [illegible]
[illegible] against the sides — By dispensing with winter passages [illegible]
with [illegible] frames [illegible] the combs — [illegible]
[illegible] — (24th) 80° [illegible] — bees on the underside of combs — [illegible]
[illegible] winter passage — Bees were down [illegible] — 25th 30° — [illegible]
[illegible] away from sides — In the two with top cols — as used in one [illegible]
[illegible] quantity of [illegible] the comb — [illegible]
[illegible]
It is very evident that a cap has a great [illegible]
[illegible] — the ease with which [illegible] to get [illegible]
[illegible]
[illegible]
[illegible] — 26th — Long [illegible] put into top [illegible]
cols from slipping off [illegible]
[illegible]
[illegible]
[illegible] — 27th — [illegible]
[illegible] the sides and bottom it [illegible]
which would add greatly to the [illegible]
sides [illegible] very little light [illegible] might be [illegible]
the bees to [illegible] — Very important — Have laid some top cols thus —



[illegible]
leaving a large central opening into which a cork for feeding [illegible]
[illegible]

kept warm with cobs or any very warm material — Here bees can be easily kept all the winter through — I find that when cobs are laid so as to leave this hollow space the bees delight to come into it — [illegible] the cobs [illegible] weather! Is it desirable to construct them so;



3, 3, be a two [illegible] for the bees to pass the cobs laid upon while which the

a short cut — 1, the space left centrally nine inches for comb to attach — 2 part to the other cobs — so as to form a carriage way bees can easily pass — What then be any need of this? — bees [illegible] to get a warm place for feeding bees — My object is to [illegible] place the feeding it [illegible] for all the cobbing — I [illegible] and lay [illegible] directly upon the cobs — or better stand for a spruce piece [illegible] the top of the cobs, and underneath in a [illegible] — Might not [illegible] them be closed [illegible] laid cobs so as not the bees [illegible] admit for such a warm place? There [illegible] down 1. & to stop the [illegible] — [illegible] at the [illegible] — [illegible] for wintering bees — [illegible] to be capable of [illegible] cobs. What we want for wintering [illegible] may [illegible] chiefly spring [illegible] the cobs and [illegible] the bees [illegible] not be [illegible] to leave them [illegible] at [illegible] the outer [illegible] layer of cobs on the outer so as to [illegible] the bees [illegible] —

— If you choose old comb very much [illegible] to keep the [illegible] as warm as it [illegible] may then be laid over cover to keep the [illegible]

I find that many bees in a spruce cluster are chilled of these in [illegible] to extract to — If they extract centrally in the comb [illegible] of something [illegible] is not green — they often [illegible] this [illegible] — when an ant [illegible] upon the top I have repeatedly seen them chilled [illegible] — and of the [illegible] did not [illegible] they will perish —

(9) — Cobs on top could not be used with frames in the [illegible] fitting cobs [illegible] (10) I do not like the idea of [illegible] up the winter passage — bees [illegible] to the cobs [illegible] (11) [illegible] though [illegible] not cold — the [illegible] — (12) The bottom board one of the most important parts [illegible] to the [illegible] — but in any permanent hive [illegible] this [illegible] of [illegible] the bottom the bees [illegible] the cobs [illegible] the [illegible] — (13) [illegible]

[illegible]

November 29th 1865 — The experience of last winter with the cobs was just such as to induce me this season to use any in the sides in bottom of the hive — As it now seems to me, any long slot [illegible] passage are more important to safe wintering than [illegible] the disposition of bees to come up into the shallow

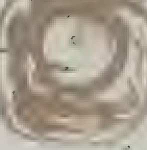
the space above chamber if they might not come

box at all keeps warm I notice during this season such place as this answer well — Make a square about eight inches on top of frames with corn cobs then —

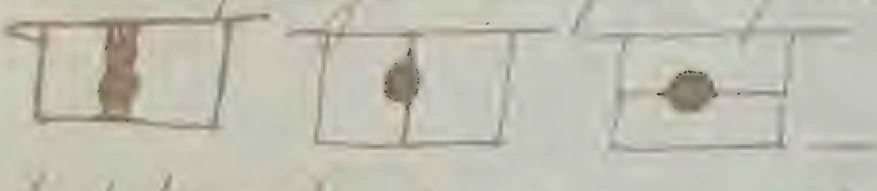
then lay over should layer then lead up in the shallow of corn cobs and old woolen garment — Bees might cluster in this space — cobs of course all the the top surface of the frames — being that every comb has the long winter slot passages — Try also some hives with honey boards on, the long honey box slots covered with woolen — or cobs.

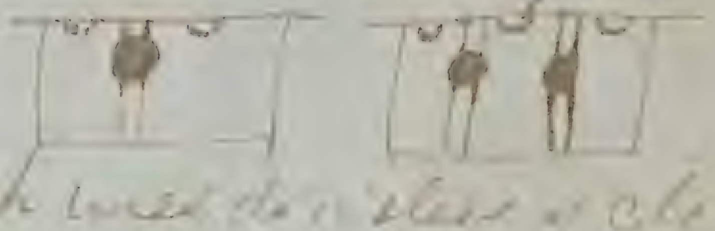
December 8th — Shall try putting cobs ~~frames~~ in a shallow box with bottom slats to hold them (see Da.) — Make sides of box to rest on gutters of rabbets — ~~ends~~ 1/2" thick — ends not so wide by 5/8" 1/2" stuff — 4 strips 1/2" × 1/8" = these when nailed on ends will leave 1/4" between them and tops of frames — so as slats to leave 3/8" shallower than [illegible] — In this cob-box — put two rows of cobs on tops of frames — and then over them another set — over them might be put a piece of old woolen garment — This would keep the bees warm and yet not damp — This cob cover may be lifted off and on without crushing bees — makes it easy to examine them at any time — and may thus be kept on until bees need supers — or till weather is warm — then these cob covers may be stacked up in some dry place taking no more room than the cobs and being all ready for use another season — Small strips may be nailed on the outside of this box all around — making a ledge which will keep all tight — and no air or heat escape except through cobs — [illegible] To day put a [illegible] of [illegible] cob-cover [illegible] hive — two layers of cobs — first layer [illegible] cobs of equal length — [illegible] second layer may be [illegible] irregular [illegible] first layer [illegible] this [illegible] over cobs [illegible] tucked [illegible] so as to prevent escape of heat [illegible] through the cobs — open space between cob-cover and [illegible] of [illegible] may be packed with cotton or paper — No doubt this will keep bees warm — and if cobs absorb all the moisture, dry — Bees could [illegible] newspaper answer as well or better than pieces of woolen [illegible] One day to day 18/20° — the hive with cob-cover [illegible] on the top of frames — thermometer put next to cobs and [illegible] paper — [illegible] 24° — Appearances thus far all look well for cob-cover — It is quite easy to examine the bees [illegible] not they come into shallow chamber by slightly raising one side of cover — quite important [illegible] paper — [illegible] 20 degrees above the range in the open air — the [illegible] — Found this A.M. — frost in the top cover of those [illegible] the [illegible] escapes! [illegible] to day [illegible] to keep [illegible] paper [illegible] — this keeps them all right — and when cob-cover [illegible] — let them [illegible] which is too damp — (Dec 1865) — long slots [illegible] cobs [illegible] both sides [illegible] — Bees also [illegible] slots [illegible] —

Jan 24th 1866 / Cross Comb Winter Passages — Mr. [illegible] in Washington in October last I observed what seems to me an admirable plan for making cross passages or winter passages of each comb — Let the combs have a hole made in them not too large

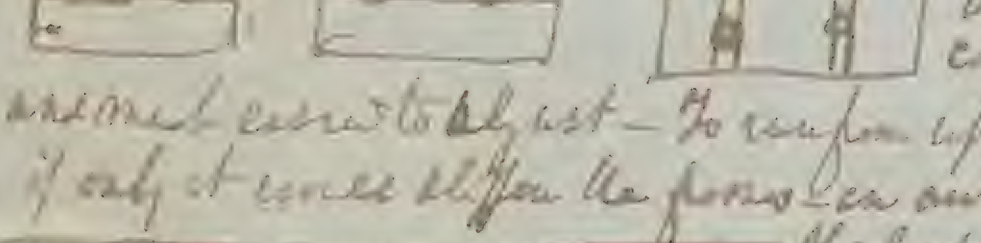


so as to leave a good face on the winter passage so that the bees would not think of coming in near the hole as to want to go in — By saw clefts in the sides of these they can be made to run up and down on strips of tin ½ inch wide — tin or wire could be used — and may be kept at any height — wire running through the comb any convenient [illegible] of honeyed combs wonderfully stiffen them and make it impossible to tear them apart — some large [illegible] to hold the comb straight [illegible] on the frames to be [illegible] or [illegible] to get honey out of combs —

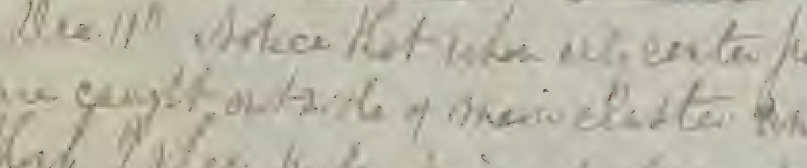




Comb [illegible] of [illegible] but too expensive — wood might be forced in some place — [illegible] light cells best — These winter cells should be about 5/8th so as to keep their face so as not to interfere with slicing off the cells of combs to draw out honey — the wood face would prevent them to be made of less than depth of comb without being filled in by bees —



I am inclined to think [illegible] might answer as much better and for filling cells in each passage than [illegible] and much easier to adjust — To run from upright to upright — whether [illegible] — but if only it would stiffen the frames — or [illegible] with some [illegible] — this last seems to me best — [illegible] to find the passage —



Dec 11th Notice that when only center passage is left bees toward outside combs are caught outside of main cluster and perish — this shows need of the three passages — that I place [illegible] pieces of old carpet be put over the top of the frames to [illegible] [illegible] to hold heat [illegible] up with the [illegible] —

Winter linings for Movable Comb Hives — Octbr 19th 1860 —

Although I have given so much prominence to corncobs as a desirable material for lining hives for winter — other materials can be used to very great advantage — old woolen garments for instance — straw — cotton — / Straw lined hives — I object entirely to a permanent lining of straw — difficult to [illegible] Takes up too much room which is needed in summer — [illegible] arrange so as not to interfere with easy removal of frames — value impaired by being in time [illegible] — a harbor for moth worms to be [illegible] [illegible] mostly for winter [illegible] to none of these objections — and as having [illegible] in the Hive to be overlooked and easily changed for [illegible] [illegible] not very great — Get good clean straw — cut to a proper length [illegible] a good flooring of

board — Drive nails into the bottom board — lay down a good flooring of straw [illegible] the

straw

bands

fasten it down with [illegible] [illegible] [illegible] of the nails! Lay the hive down on its side — and [illegible] the same may be done with the sides in the same way — If desirable the same may be done with the [illegible] — making the lining not so thick [illegible] [illegible] [illegible] put in every — making the lining not so thick — [illegible] for under side of the [illegible] [illegible] — Use same arrangement for under side of the [illegible] — the easiest way to and let straw just lie close upon the tops of the frames — the [illegible] [illegible] frames high so as to clear them — [illegible] the straw [illegible] [illegible] bottoms of frames might almost touch it [illegible] — Hope to fix up [illegible] thus [illegible] to [illegible] — some hives on this plan tomorrow — to see what time required and to test this winter [illegible] — (20th) I fixed one hive — If the corn cobs are best this plan admirable in those parts of Europe where cobs cannot be obtained!!

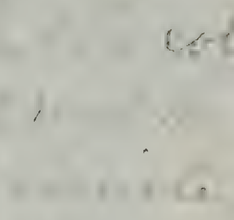
53

Nov 28th 1860 Winter covering for hives—

Cannot suitable woolen mats be made coarsely woven for winter use for bee hives— To what the point of wintering bees in open air in this climate one of great and sudden changes that considerable expense [illegible] be a good investment— Suppose something of this kind attempted— Say [illegible] [illegible] [illegible] between four combs— let the two combs outside these have old woolen garments tacked to them— kept off from bees [illegible] with paper [illegible] [illegible] so that bees would [illegible] [illegible]— Would they not then more compactly cluster [illegible] [illegible] as soon as the cold [illegible] within these woolen walls instead of lying on outside combs to get chilled and die? Keep two [illegible] combs within woolen walls— and [illegible] outside of sides of them— Would not this be more comfortable [illegible] than any other hives ~~[illegible]~~ or lining of hive or those sides. Do bees retreat from these sides and the only effect of the lining to make hive less [illegible] This can at once be found [illegible] [illegible] of the hive [illegible] with [illegible] and [illegible] [illegible] the [illegible] [illegible] the difference between them capable of being [illegible] taken at once— (31st) 10° ———— [illegible] [illegible] for bee houses— Have observed what seems to be an excellent place for wintering bees in the open air— Get woolen mats— old pieces of carpet— better still the woolen felting such as the [illegible] Felting Company make— cut out pieces which when [illegible] together will make a mat which can be [illegible] [illegible] [illegible] hive— fastened to front and rear— corners made with this [illegible] square— not coming to bottom of hive so as to interfere with removing cleaning floor. Mat coming up high enough to cover the tops of frames [illegible] [illegible] [illegible] in order to keep frames higher from bottom board of hive— Mat ought to be wide enough to include not more [illegible] frames— [illegible] [illegible] of food enough for [illegible] or ~~[illegible]~~ days [illegible]— Top should be covered [illegible] [illegible] to [illegible] [illegible] [illegible] of hive— bottom board [illegible] [illegible] to this cloth to be able to push in and take out with greater ease— Front of mat might come down to bottom board— Back of mat come down [illegible] so as to be held up to let bottom board [illegible] slip in and out— The bees by this arrangement [illegible] kept within woolen walls— [illegible] all [illegible] comfortably with this— Suppose first cost of this arrangement to be [illegible] [illegible] per hive— then for interest and depreciation 1/3 [illegible] 25 cts per hive— If the mats are properly cared for when removed from hive this will be ample— what is this expense to the [illegible]? Bees must be made to winter in the open air as well as in [illegible] [illegible] [illegible] as in other hives— Too many [illegible] in [illegible] them of special greater depletion – [illegible] say south of 40° latitude [illegible] [illegible] [illegible] [illegible] to perhaps the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] may [illegible] [illegible] [illegible] [illegible] [illegible] to let lead get the [illegible] [illegible] [illegible] may also be put [illegible] the [illegible] as recommended Dec. 28th above —

[illegible] 12th [illegible] — Silver and Gold of [illegible] [illegible]

[illegible]



55

[illegible] into the boxes [illegible] carefully over the [illegible]

[illegible] not covered by it should have old carpet, straw mat &c — This [illegible]

each warm — As cold strikes them from below they naturally retreat [illegible]

[illegible] surface against which to back up — and one which will [illegible]

[illegible] and have above them. This very different from allowing to keep whole [illegible]

C. before would hold only 90 cubic inches — now only 30 — If the

[illegible] they will be found to form their winter cluster mainly [illegible]

[illegible] the small cob box — these boxes once filled with comb [illegible]

[illegible] from year to year [illegible]

may be made the "Warm Cob Cover" = Jan. 15. [illegible]

[illegible] in a 13 frame hive which had no winter [illegible]

no bees clustered up in it — thought plan a failure — Used one with cobs to rest

on top of frames in the 10 frame hive — saw no particular benefit — about three weeks

ago saw bees clustered well in the 1st one — Winter has been steadily cold — unusual

[illegible] this latitude — no extreme cold [illegible] about 6 below zero — but the average

[illegible] very low — After this bees well clustered up in the coldest days [illegible]

in first cob box — made the [illegible] in 2nd — and they readily accepted

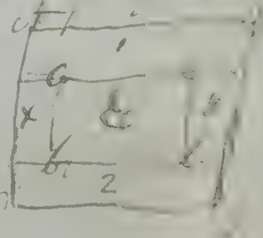
of it — Many experiments have led me to believe that bees desire something

warm to cluster up against — They can thus prevent any current of air from

[illegible]

[illegible]

climates — straw, old carpet &c may be put over — or thus —



about 3 inches deep — to hold two depths of cobs kept up

from tops of frames a c, b d, cap strips about 6 inches

x, y, filled with cobs 3/8th from tops of frames — E inside

[illegible] 8 inches square — cobs to be kept 3/8th above frames or higher if it

[illegible] thought to be made on the "warm cob cover" plan as the [illegible]

[illegible] x, y [illegible] be filled with woolen rags or straw crowded in — and so might 1, 2, — this

[illegible] in [illegible] each season — E should be made so warm that [illegible]

[illegible] it — Inside box to be nailed and to have strips for cobs to rest on [illegible]

[illegible] 1, 2, [illegible] small cobs — Once fixed would answer as long as the

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] to hold liquid food" — here place for water sweetened to aid in early breeding —

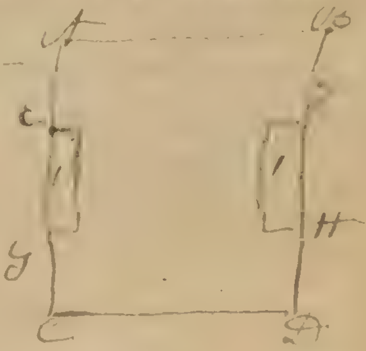
[illegible]

[illegible] easy also to put candy in E — A patent on this might not pay — and yet [illegible]

[illegible] thing — Keep this in till bees are [illegible] to [illegible]

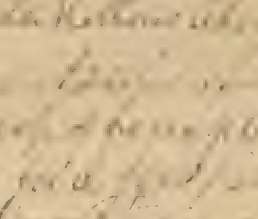
Winter Arrangement Continued—

[illegible] 10th 1868— Home to day concluded to discard the cobs.
The arrangement [illegible] rather too complicated — Straw tied into bundles [illegible]
cut to suitable length so as to crowd into the spaces [illegible]
box dispense with all [illegible] strips — Made the inside box 1/2 inch [illegible]
the [illegible] of the [illegible] box [illegible] in the outside box [illegible]
[illegible]
[illegible] frames — These bundles when tied to be cut with
[illegible] to suitable lengths [illegible]
[illegible] — and as soon as cold weather comes on will be all right — D. E. L. [illegible]
[illegible] the sectional box might be dispensed with and the straw bundles used in
[illegible] of the hive! The only thing [illegible] is the straw bundles — the worst [illegible]
the difficulty of [illegible] the straw bundles against rats and mice when not in use
[illegible] bright [illegible] days the [illegible] a few may be taken off to thoroughly air and dry
bundles — Might be filled into the upper sections or surplus honey boxes turning the
outside down and when [illegible] setting [illegible]
[illegible] the small central [illegible] —



[illegible] honey [illegible] — Make bundles to fill
in A B E F — crowded down so as to rest ~~to~~ on tops of frames
[illegible] in G H C D — About four bundles needed for this — Then
[illegible] two small bundles — or two strips of [illegible] a few corn cobs —
[illegible] — of the thickness you ~~want~~ need to get the proper depth for your [illegible]
[illegible] used should crowd in tight — Might in some [illegible] to be better to dispense [illegible]
[illegible] the bundles in E F G H just high enough [illegible] tops of frames to [illegible]
[illegible] them as soon as cold weather [illegible] always [illegible]
[illegible] and [illegible] to crowd towards center — Easy when bees have [illegible]
[illegible] and winter has fairly set in if thought desirable to lift [illegible]
[illegible] — Small [illegible] seem often in the present arrangement to crowd to one side or the
the hive — this straw [illegible] chamber [illegible] keep them in the center
[illegible] the two tiers of bundles might be used — [illegible] bundles were made [illegible]
[illegible]
[illegible] — Easy at any time to examine bees [illegible] one central bundle [illegible]
[illegible] picking [illegible] of [illegible]

[illegible] water &c — run down between central handles two 1/2" wide sticks about an inch apart
[illegible] which would give [illegible] tube or chimney to admit bees [illegible] top
[illegible] the liquid food — [illegible] may be [illegible] up at any time [illegible]
[illegible] might be [illegible] but [illegible] be needed
[illegible] have [illegible] the advantages [illegible]
[illegible] need [illegible] wintering bees [illegible] best [illegible] the spring [illegible]
[illegible] combs [illegible]
[illegible] between [illegible] necessary [illegible]
[illegible] be continued until hive is well filled with bees — and [illegible] ready for supers —
[illegible] in spring [illegible] time [illegible] with the
[illegible] bees — It [illegible] probably be best to take out [illegible] keep the spaces
[illegible] on each side of the bees [illegible] two room to
[illegible] the bees [illegible] this would give the combs 1 2/3 [illegible]
[illegible] instead of [illegible] — The [illegible]
[illegible] in the spring — It is very obvious that this [illegible]
[illegible] would be [illegible] applicable to close [illegible] fitting frames [illegible]
[illegible] bees [illegible] and [illegible] be [illegible]
[illegible] infringing on my patent — 17th [illegible] the idea of fitting [illegible]
[illegible] upper section [illegible]
[illegible] in this light [illegible]
[illegible] outside handles [illegible] place [illegible] lifted
[illegible] to get the [illegible]
[illegible] so that [illegible] can be lifted easily [illegible] — If any advantage central handles
[illegible]
[illegible] central [illegible] bees
[illegible] on [illegible]
[illegible]
[illegible] to [illegible]
[illegible] block [illegible] on each side [illegible] central handles — It
[illegible] top of [illegible]
[illegible] room
[illegible] on top of [illegible]
[illegible] comb [illegible]
[illegible]
[illegible]



[illegible] —

14.25 — Each frame 1.425
[illegible] comb .875 Space between combs .65
25 [illegible] inches each — .8875
[illegible] each space .237 — So that each space
not including empty cells hold over 1/8 more
[illegible] would be [illegible]
[illegible] in [illegible]

14th [illegible] almost [illegible]
straw bundle [illegible] to use [illegible] — Next thought to use wooden bundles — but
now think best to use 8×8 box — 1½" inch [illegible] With this rebate [illegible] get [illegible]
[illegible] which pack wool — wool [illegible] rid of the [illegible]
[illegible]
[illegible] — [illegible]

[illegible] warmer is [illegible] — Crowd woolen wads (woolen rags) nothing better can be got
between ranges of comb frames to keep [illegible] and warm!! Certainly so easily, especially
[illegible] — how little material needed — [illegible]
[illegible] the spaces between the combs. [illegible]
only in the box — For stimulative feeding in spring — [illegible]
[illegible] to let them up to [illegible] — that when not in use put into [illegible]
[illegible] box — nothing to [illegible] in the space — Would bees dislike
[illegible] little to continually ½" of the comb — If they did they would [illegible]
[illegible] to remove it and would soon [illegible] up — Hive [illegible] had the [illegible]
[illegible] there has lost few bees — and has hatching brood to day! Have found none in any
[illegible] hive as yet — 19th — Have opened many hives — find [illegible]
[illegible] few dead bees — in others many — Bees in proportion to the [illegible] has been [illegible]
(unusually long continued cold) [illegible] their condition will be [illegible] brood [illegible] little [illegible]
[illegible]
[illegible] of great [illegible] Have to day [illegible] between some of the spaces between the
[illegible] two hives — with a [illegible] — easily done and quickly without hurting any bees
[illegible] also tried wool to feed [illegible]
[illegible] wool dry — [illegible]

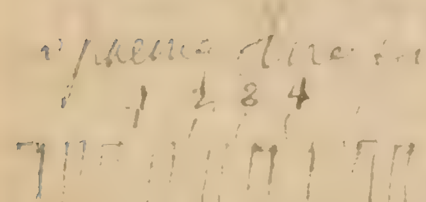
Hives — After spring has [illegible] and bees have been [illegible] out by
[illegible] — spaces between combs would [illegible] hole left [illegible]
[illegible] between frames and front and rear of the
[illegible]!! [illegible] — To do this, and to put wool between [illegible]
[illegible] bees [illegible]
[illegible] under [illegible] comb spaces — [illegible]
[illegible] necessary [illegible]
[illegible] — If bees gum [illegible]
[illegible] — easily cleaned in hot water — [illegible]
[illegible] combs — [illegible] bees — [illegible]
would do the same with wool. [illegible]
[illegible]
[illegible] — Queen!! [illegible] between front and [illegible] hive and [illegible]
[illegible]

— [illegible] of winter passages, [illegible] box; [illegible]
[illegible]
[illegible]
[illegible] warm place — [illegible] caught between outside [illegible]
[illegible] Queen? [illegible]
[illegible]

[illegible] Bee hives; could get [illegible]
[illegible] - [illegible]
[illegible] winter better in the open air than in cellars or any other [illegible] - Attention
should be given to keep the dry [illegible] - Not near so much [illegible] crusted
[illegible] winter [illegible]
[illegible] in and out - with all its [illegible] - rats mice - sudden changes to hurt when [illegible]
[illegible] would pay well [illegible]
[illegible] - Easy to have [illegible] mice [illegible] to [illegible] if great care [illegible] to carry bees too
[illegible] & take honey combs - [illegible] wool on [illegible] 3 of bottom board (back [illegible]
[illegible] would [illegible] in wool; if dead bees would not get caught in [illegible]
[illegible] easily [illegible] by bees - Easy to find out by Experiment whether they can remove [illegible]
[illegible] bottom board [illegible]
[illegible] and bottom [illegible] of hives as [illegible] could [illegible]
[illegible] be made and sold [illegible] bottom [illegible] If good [illegible] and [illegible]
[illegible] - patent covering this too, would be [illegible] - Easy to find out
[illegible]
nothing like coarse filling - [illegible] Am satisfied that [illegible] bottom [illegible]
[illegible] inside - [illegible]
[illegible]
[illegible] when they need to travel - [illegible]
[illegible]

[illegible] pound of [illegible] would [illegible] for [illegible] [illegible] on the
[illegible] to [illegible] [illegible] [illegible] woolen [illegible], [illegible] be [illegible]
[illegible] — and could not be so well [illegible] between [illegible]
[illegible] — Bees [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] — [illegible] of the
[illegible] let the leave wool alone this very important. Shall leave wool between [illegible]
[illegible] [illegible] have [illegible] the season to see how [illegible] [illegible] it — [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] not [illegible]
[illegible] [illegible] [illegible] — in a new [illegible] [illegible] [illegible] [illegible]
[illegible] because of [illegible] of quick [illegible], [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] — 22nd — [illegible] [illegible] [illegible] cold — yesterday 8° — today 18° — [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] that [illegible] after the Spring [illegible] [illegible] [illegible] this [illegible] [illegible]
woolen rags!!, To day I put some [illegible] of [illegible] [illegible] [illegible]
[illegible] [illegible] rags [illegible] in them [illegible] [illegible] — [illegible] [illegible]
[illegible] keep [illegible] [illegible] better — [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] may be [illegible] [illegible]
[illegible] [illegible] woolen rags — [illegible] [illegible] [illegible] [illegible] large [illegible]
[illegible] [illegible] [illegible] ! [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] get [illegible] [illegible] [illegible] [illegible] to [illegible] [illegible] [illegible] of [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] would [illegible] the [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] combination with woolen rags or leave wool for [illegible]
[illegible] [illegible] [illegible] [illegible] warm [illegible] — and [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Let [illegible] [illegible] [illegible]

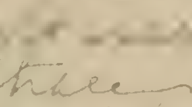


4 frames — two on each [illegible] — have no change in spaces [illegible]
spaces [illegible] [illegible] be divided among four [illegible]
so as to secure [illegible] of the bees —
Usual space between [illegible] of frames .42
Space given to 4 middle spaces — each of .981
If bees are clustered between these 4 middle spaces — they would occupy about [illegible]
9.9 — this would give room for a large stock to live [illegible] [illegible] [illegible]
[illegible] [illegible] to divide the space among six [illegible] — Feby 24th — [illegible] [illegible]
[illegible] and [illegible] together — [illegible] [illegible] [illegible] [illegible] — [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] to [illegible] [illegible] [illegible] — would not [illegible] [illegible]
[illegible], but do not think this would be needed — [illegible] to make it
[illegible] — a rebated edge left on each [illegible] against which [illegible]
[illegible] made deep [illegible] and wide [illegible] to [illegible] [illegible] [illegible]
[illegible] [illegible] not over 3/4 inch and [illegible] filled with [illegible] [illegible]
[illegible] — [illegible] with woolen rags and warm [illegible] [illegible]

[illegible] box — [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] left of all so little trouble to remove [illegible]. Those who [illegible] expose — can use rags between spaces — How doubtle they [illegible] [illegible] on the [illegible] [illegible] place — filling in the [illegible] [illegible] — Do not let side pieces for [illegible] go down nearer than 3/8 [illegible] [illegible] they can keep all clean in Summer — In such a hive I could [illegible] air even in [illegible] — with warm box the arrangement — [illegible] (if so much) needed to fill in [illegible] spaces — lay on mat — box — [illegible] [illegible] in examining and preparing hives for winter! — 26th Examining [illegible] small warm box fixed up to day in admirable condition — as compared [illegible] in 18 [illegible] hives which were in the [illegible] equally good and with the exception [illegible] [illegible] [illegible] tops of frames so as to prevent escape of air — Space above frames before and [illegible] [illegible] may be [illegible] — 4 wide spaces between combs & stopped with rags [illegible] [illegible] of them — other spaces stuffed with [illegible] rags [illegible] no mat or carpet [illegible] — mat, carpet, old pants &c — laid over top of box — large [illegible] board laid on to hold all down — same as put before the [illegible] box. opening [illegible] perfect protection above the spaces while the bees [illegible] not only under the box [illegible] — For want of such an arrangement small or [illegible] stocks and some [illegible] shift to one side of the hive usually the side where the [illegible] [illegible] out of food and perish — This arrangement will keep [illegible] [illegible] [illegible] and where their food will be most accessible! — In preparing a large num[illegible] for wintering — go through with them all — cutting [illegible] [illegible] and tops of frames — adjusting combs &c — and put on warm box — the [illegible] [illegible] [illegible] easy to do it when weather too cool to allow hives to be opened — [illegible] [illegible] too [illegible] to allow bees to fly before you [illegible] [illegible] be done with [illegible] [illegible] bees — It would not [illegible] be necessary to carry to their proper distances until the bees could fly freely — as they would not [illegible] [illegible] they could get [illegible] supplies — If any [illegible] [illegible] [illegible] box — might be [illegible] until a [illegible] time to [illegible] [illegible] honey [illegible] [illegible] [illegible] [illegible] [illegible] lined — put in in place of ventilator — entrance [illegible] holes [illegible] [illegible] do nothing with it — would give plenty of air to bees [illegible]!

27th Small box might be one inch deep — stretch [illegible] [illegible] over it — [illegible] or [illegible] [illegible] with [illegible] — [illegible] might be tacked down

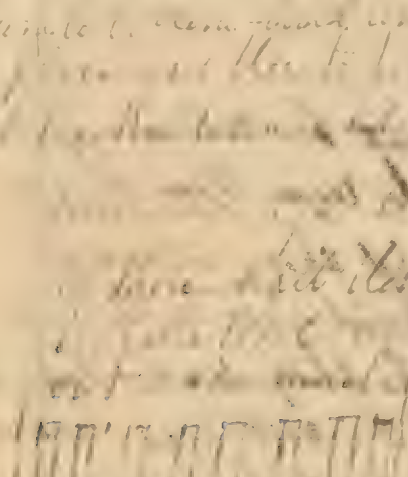


and [illegible] [illegible] [illegible] the tops of frames [illegible] [illegible] in place — after laying on [illegible] [illegible] board might lay [illegible] to hold [illegible] in place — Combs taken out in the [illegible] — [illegible] [illegible] might be laid on the [illegible] — [illegible] [illegible] of box — [illegible]

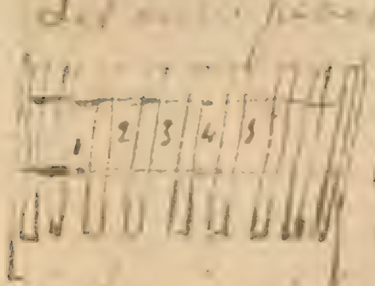
[illegible]

hold it in place — [illegible] as soon [illegible] [illegible] [illegible] — [illegible]
as [illegible] to [illegible] to keep them [illegible] so, the [illegible] [illegible] [illegible] — [illegible]
[illegible]
no [illegible] [illegible] letting this — [illegible] down [illegible] to [illegible] — lay down one cob to rest in [illegible]
[illegible]
[illegible] to the [illegible] cob — be [illegible] to lay [illegible] through [illegible] the [illegible]
and [illegible] to keep [illegible] hole in place — [illegible] [illegible] [illegible] [illegible]
[illegible]
[illegible] to [illegible] about 3/8" or [illegible] get by [illegible] 7/8" [illegible]
[illegible]
[illegible] with the [illegible] — straw [illegible] — [illegible] this place need not be [illegible]
[illegible]

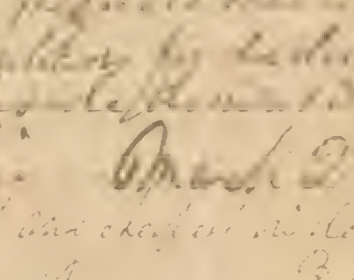
[illegible] on the surface [illegible] [illegible] [illegible] — [illegible]
[illegible]



[illegible]
[illegible] thickest [illegible]
[illegible]
[illegible] [illegible] [illegible] — [illegible]
[illegible] with [illegible] bundles —
[illegible] [illegible] high — at [illegible] against [illegible] — [illegible]



[illegible] — [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] to keep [illegible] filled — [illegible] [illegible] [illegible] 6 X [illegible]
[illegible] 14 X 10 — the box — about one [illegible]
under box — so that the rest can be stretched [illegible] and [illegible] in place — [illegible]
[illegible]
[illegible]
[illegible] filling in with straw — [illegible]
[illegible] — March [illegible] — [illegible]
[illegible]
[illegible] 62
[illegible] inches deep [illegible]
[illegible] pieces [illegible]
[illegible] sides about 7/8" [illegible]
[illegible] laid down [illegible]
[illegible] filled with
[illegible]
[illegible]



con
[illegible] cobs — [illegible] [illegible] on them — use mats or cobs [illegible] [illegible]
[illegible] ago — [illegible] [illegible] frames taken out to let honey board — [illegible] who [illegible] [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] as the chance — [illegible] [illegible] [illegible]
[illegible] [illegible] with [illegible] [illegible] are there to feed [illegible] water — good [illegible]
[illegible] cold weather — [illegible] pretty close to clustering bees — Of course [illegible] [illegible]
[illegible] with a few strips — cobs — [illegible] — [illegible] with [illegible] [illegible] under [illegible]
[illegible] small frame 8 × 8 [illegible] high — with woolen rag carpet — [illegible]
[illegible] cobs — [illegible] [illegible], [illegible] over this — lay comb or honey board over this
[illegible] [illegible] substance — all purposes — least cost — most labor — The small [illegible]
[illegible] [illegible] — Objection to Cobs — moisture cannot pass through them — [illegible]
[illegible] it [illegible] [illegible]

[illegible] 20th — Find as yet but a single swarm — in the only nucleus wintered in cellar — [illegible]
[illegible] wintered on special winter departures [illegible] far more safe to [illegible] than those
[illegible] in the open air — April 9th — Use for mats woolen rag carpets — bind strong around
so to prevent ravelling out — cut out center for small central box — bind well center piece —
[illegible] large piece around hole — think woolen rag carpet fills the bill! cheap — strong — warm — easy to
[illegible] — Centre piece of honey board might be made to screw into clamps — so as to take out and leave
— this well enough where climate not so very severe as to cause dampness under honey board —
[illegible] new to lay loose wool on carpet and to raise up honey board enough to give as much of
shelter as would be needed — Easy to work all right in this way — No place
here and not have shelter at all — [illegible] —

See Dec— If such an arrangement [illegible] enable to put on or lift off the corn cobs as easy a better [illegible] of make into a mat— and would probably be cheaper than to make the mats— On one frame at one side— or perhaps better still— stand up on one side and fasten by lists [illegible] place the corn cobs!— Keep out one frame on the other side— having put those corn cobs on the side where corn cobs are— bees would cluster there— leave out on the bottom next to the side which is not protected by cobs a few cobs say two— the bees could carry out their dead there— or rather fill one across of cobs there

and occupy part of the space left with ~~[illegible]~~ cobs [illegible] from [illegible] of it [illegible] but both sides might have the corn cobs placed on ends— the bees can carry out dead bees & where there are no cobs on the bottom [illegible] [illegible] or when the weather is suitable for flying—

Sep. 10th— Cut pieces 1 1/4 in. square high rest or rabbits [illegible] the rabbits— fasten them with nails or dowel pins, frames rest on these [illegible] [illegible] used some of the [illegible] for holding the cobs— Be sure and not have these strips too [illegible]— for [illegible] the frames [illegible] the cobs— if not [illegible] easy to set their strips under them—

Oct 5th— To day I have brought my plan for corn cobs for wintering bees to such a state as to please me better— 1st I dispense the [illegible] except for wintering bees— they do not need them in the [illegible] the cobs [illegible] touching the [illegible] of the hive and [illegible] always at command— I can set [illegible] in the [illegible] any [illegible] cobs [illegible]— To [illegible] cobs having [illegible] in the [illegible] [illegible] good [illegible] places for [illegible]— 3rd I [illegible] the bottom of the hive [illegible] have a portion of cobs— one [illegible] the entrance and [illegible] [illegible] [illegible] [illegible] in [illegible] [illegible] [illegible] [illegible] [illegible] chilled in going out or coming in— This may make the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Instead of strips to [illegible] the frames use corn cobs [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

(C) [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] one frame [illegible] to be left [illegible]

(C) [illegible] the frames— use a frame with cobs [illegible] [illegible] [illegible]

Driving. — By removing the top of my hive driving may be done with the greatest ease — The bees are able to pass into an upper box through all the ranges of comb and from the sides — a little smoke placed in the box below will often hasten their ascent — No need of reversing the hive &c — although this may very easily be done — Where the hives have glass sides the noise made by rapping against them will soon alarm the bees and cause them to ascend — We ought not to attempt to hurry this process too much — as the bees are always anxious to secure as much honey as they can before they leave their old quarters — I find by rapping against my driving hive the Queen starts almost among the first — It is very difficult to drive a small swarm out of a hive but partially filled with comb — in the ordinary hives — or to expel a colony that has lost its Queen — In my hives by the use of the compound box the combs may all be taken out in a few minutes and the bees compelled to enter a new hive — In most cases experienced and fearless operators will find this method of transferring the bees much the simplest — ~~It enables us to take out half the~~

March 6. 1852 — According to my last plan for ~~driving~~ constructing a hive the bees may by the aid of a little smoke be driven at once — where the bottom board is removed — into the upper box — and this may be lifted off. This will enable those who are apt to be stung to multiply colonies safely on my plan —

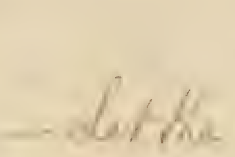
Smoke — If bees are alarmed by a little smoke — before the hive is operated upon they fill themselves — and may be easily managed —

Driving-to form Art. S.— When as many bees with 1 old Queen as are desired are secured either by driving—or by removing frames wh. is much 1 best way—then set the bees in the new colony on 1 stand where 1 old one stood—shut up 1 old one and keep it shut until 1 evening of 1 that day—put it some distance from 1 old stand and join its latest, in that time before sun-set— It ought to have water of course— A part of 1 combs in 1 old hive may be transferred to 1 new one if it is not intended to have 1 old one swarm again—

April 23. 1862

Divider /— Let it be glass—

Dec. 7 1862—

Door-side one for my hive—Let the top, bottom & sides be bevelled to a sharp edge— 

1,1 are clamps to prevent warping— — is a thin [illegible] also bevelled at 3. and made to slip on a [illegible] board and in slots under 1,1 the design [illegible] to have the door [illegible] on the [illegible] where it may be put—This door answers as a divider and let the comb come out so to be wide as well as the top—Some may prefer such an arrangement—it makes the hive—the honey bars rest on the sharp edge of this door— If the sides of the hive project rear as well as front a double portico might be used—this would avoid "unhiving" effect of side door—the back portico need have no bottom—roof'd portico front and rear might be made higher to set Supers on—

D

Drones — The Drones are unquestionably the males — It seems difficult at first to see why there shd be so many in a hive — especially as it has been satisfactorily established that one impregnation makes the Queen fertile for life — As the impregna° of the young Queens always takes place on the wing — it is of the utmost importance that the Queen when making her excursion to meet the drones shd be sure of finding one ^ (If she has to make many excursions she my be lost) — this she might be tolerably sure of in a large apiary, even if each hive contained but few drones — but in a state of nature bees live in forests and a colony may have no neighbors for miles — A good stock sometimes sends off three or more swarms — especially in the hot climates of which the bee is a native* — the Queens of all these except the first which contains an old and feeble Queen — will need drones — These and other considerations show the necessity of their being produced in large numbers — As we have by domestication the bees and brought them in numerous colonies in a small compass taken away the necessity for so large a supply of males — we ought to do all that we can to limit their production — If a hive contains a very large amount of drone comb it will be sure to disappoint its owner — In hives constructed with movable bars such combs can be cut out — so that the bees may replace them with worker cells — In the profitable management of an Apiary the fewer drones the better — A very large number are as useless as a very large number of colts or bulls in the farm yard — The farmer who shd resolve to allow the population of his [illegible] to remain undisturbed — on the plea that it is best to follow Nature (forgetting utterly that his stock are not in a state of nature) will be as wise as the Apiarian who refuses to do all that he can to discourage the breeding of drones.

Number of — The very fact that many young Queens are lost when they go out for impregna°
shows what would be the result if drones were not quite numerous —

* In Sydney, New South Wales — one colony is said to have increased to 300 in three years!

Drones early — A hive might have early artificial warmth to breed the drones sooner — so that the It. Q. may be impregnated earlier than otherwise —
Destruction of drones desirable but very limited production of the great thing —

Door-side one — See D—

Expulsion of — Some time in July or August soon after the swarming season is over the bees expel the drones from the hive — They sometimes sting them — but more generally gnaw the base of their wings so that they cannot regain the hives — if they are not killed in this way they are so bemauled that they cannot feed and thus they rapidly grow weaker & perish — The bees not only destroy all the old ones — but drag out all the immature ones from their cells — Occasionally for some reason or other — they destroy the drones early in the Spring even before swarming has commenced — If bees are moved from their position greatly reduced in numbers by removing them from their accustomed stand or from any other cause I have noticed that they almost always begin at once to destroy the drones —

If a hive does not expel its drones at the suitable time — it may be taken for granted that there is something wrong in the hive — The Queen is probably diseased — or dead — and the colony sh'd at once be supplied with a new one — or if this cannot be done and the bees show by their want of spirit that they are without a fertile Queen — the colony sh'd at once be taken up — before it is robbed or destroyed by the moth — In my hives with movable bars — it is easy in a few minutes by ~~removing~~ lifting out a few of the central combs to ascertain whether there is brood and of course a fertile Q.

I w'd again urge the Apiarian to beware of Queenless stocks — The old fashioned bee keeper always took up such stocks — because he noticed that they were long on their stands. At present they are generally allowed to be moth breeders to the ruin of the whole Apiary

Drones Keeping — In a large Apiary it will be advisable to have some hives keep their drones until late in the season — [illegible] — By inserting drone comb in the very center of a hive quite early in the Spring as soon as the Queen commences breeding might not drones be bred much earlier than usual in the Apiary —"

Drone Eggs — how to rear queens from — New

Dowell — better than battens to fasten combs —

Drones— Huber thinks that Queens must be 11 months old before they lay eggs for drones— altho' he seems to admit that there may be a few raised first season— But young Queens sometimes lay a number of such eggs and swarm same season they were hived— In Huber's latitude he did not notice such an occurrence— There seems to be a natural connection between abundant honey gathering and drone breeding and swarming— Buck-wheat swarms— are very late—

May 1852— Found drones reared in worker comb— it was taken from a hive in which there was but little drone comb— given to a Queenless hive to rear A Q— noticed some cells covered with drone capping—
Theory— Queens do not deposite drone eggs in cells— unless circumstances are favorable for swarming— they do not deposite worker eggs in their proper cells unless circumstances are favorable for rearing them— the bees eat the extruded eggs— is not this the case with the eggs of drones—? I ~~know~~ know that both kinds are laid nearly together— perhaps the same day— when a swarm is weak no drones— when they begin to be powerful— drones— queens so— Have noticed in many hives a few small drones reared among the workers— in worker cells—

(May 7, 1860)
To shut in drones— Set a strip before fastened against projecting sides of hive— so that a strip moves in them as a slide— Set this check upon several strips just high enough to let out queen and workers but not drones— Day 8/10— Drones very near the slide— early in day close again—

June 1854

Drumming — flight with a milky humming only visible to the feet — flapping with feet but — striving to hold upon combs is what is wanted — then they feel as a man when house is about to tumble down — Next [illegible] — American white bee —

[illegible] melted the sheets of [illegible] two inches wider — showing their [illegible] at this season they prefer to store up the food in their old combs [illegible] and on each side [illegible]

[illegible]

compelled to hang in their weighty clusters upon them. (11)th. Forced two more frames with full [illegible] [illegible] one of them [illegible] on one side [illegible] [illegible]

Early Breeding – Put hives after they have flown and have well cleaned themselves ~~into~~ upon fermenting stable manure – old stocks which have abundance of bee bread only ought to be forced –

Mar 22 – 1852 } Let the dark space as soon as weather has allowed bees to fly and cleanse themselves – be filled with manure –? smell – vapor – must be excluded – doubtful how wd answer – Suppose pipe from greenhouse heater to pass under dark space – this might answer – and a very pleasant heat might be kept up – Air tight coal stove might be used for experiment – Dark space may have a chimney – so that bees will never perish for want of air – even if snow clogs entrances – The heat &c might be kept from entering the hive directly – allowed to warm bottom board – or to fill doubled space – manure can be watered from time to time by ~~making~~ [illegible] – bees must have water given to them – and ought to have a little honey – Where horse manure can be had on the spot I think that this plan might answer – The manure afterwards used for gardens –

[illegible] the bees would thus have a mellow [illegible] [illegible] as tho' there wd be much less chance for [illegible]

To test bees fully a large number [illegible]

[illegible] I think the stocks might [illegible]

[illegible] filling them with [illegible]

61

Comb Guides or Comb Foundations — See Journal — March 16th 1868 — 28th — 31st — April 8th

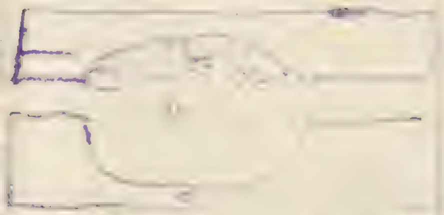
a E

[illegible]

[illegible] didn't [illegible] melted wax so that the bees might have enough to make the sides of the cells [illegible]

[illegible]

Framed [illegible]



This would allow the bees to cluster upon the [illegible] and to have more [illegible]

[illegible]

which must be [illegible] some frames with strips of [illegible]

[illegible] between [illegible] frames [illegible]

for a fair test but something may be learned — [illegible] sent to [illegible] A. G. [illegible] and [illegible]

[illegible]

be too much — Or may not foundations as thin as can be handled be prevented from sagging by some [illegible]

[illegible] strengthening [illegible]

[illegible]

13

Experiment – if it can be Comb dipped in various solutions and exposed to see preserved against bee-moth –

Drones – See Mater Regia – Huber speaks of Queen refusing to lay worker eggs in drone cells – At first this wd seem to overthrow y theory of Dzierzon – but it does not necessarily – construction of queen cells and laying of drone eggs go together – indicating their connection – If y Queen can lay drone eggs or not at choice – she wd not lay them in y circumstances in wh. Huber put her – for she wd have no intention of swarming –

Fertile Workers – Huber found such – reared in cells adjoining those of Queens reared artificially – he did not decide how they were impregnated – Obtain them as he did – confine them to hive – and see if they will lay eggs – examine whether they have a sperma-theca – and whether those that lay eggs are impregnated – Examine microscopically the food of young queens and the food of other larvae – try it if possible by chemical tests –

Dzierzon found fertile workers or drone mothers – he was likely to do this because he raises so many artificial Queens – He believes that without impregnation they are able to lay y eggs of males – let some of their eggs be touched with y male semen –

(April 23, 1861) Learn by experiment from what causes queen to lay eggs –

Do the bees give their queen [illegible] – If a queen does not meet the drones she will long lay no eggs – [illegible] she meets drones – can we give reason – So of diminished [illegible] – try to put a queen as soon as she comes back from drones with only a few bees – and no pollen – another with honey but no bees – and take [illegible] as soon as eggs begin to [illegible] to [illegible] for dissection – (24) One with pollen and honey and no bees – one [illegible] eggs shut in her hive so that she could not go to meet the drones –

Worker—(1) Let a worker be dissected in the nymphine state—and when it has just emerged—to see if any traces of an ovary can be found—or if it is more clearly developed then than later—(2) Let the eggs in worker and in drone cells be examined and measured microscopically to see if before hatching there is any difference—also the worms for the first few days—
(3) Let rye flour be mixed with honey and fed so as to ascertain whether bees can on this alone nourish their brood—(4) Let the air of a hive when bees are working in wax be examined to see if it contains more carbonic acid gas than when they are not—(5) Let the air of a hive be examined when the bees are in repose in winter and have none but a very small entrance—draw the air from the top a glass hive with a stopper the best it ought to be well protected—(6) Examine microscopically and in various other ways the food of the royal larva—and that of the worker—(7) Measure size of a bee moth—(8) See if workers and ~~royal cells~~ young Queens when taken from bees and kept warm will eat of themselves so as to grow—whether the food in which they seem to float decreases—

Enemies— The Bee-Moth Tinea-Galleria—(Hive Moth) This is the most destructive enemy of the Bee—Birds—King-bird—Martin and some other birds are fond of bees—The wanton destruction of birds the cause of incalculable loss to the farmer and horticulturist—It is a well known fact that birds return in the Spring to the place where they were reared—and that they ~~were soon~~ will soon decrease in places where they are allowed to be destroyed—No Apiarian however partial to his bees sh'd allow the birds to be destroyed—because of the few bees which they may devour—They will do him much more good than harm by killing the insects wh. prey upon the fruit trees—and wh. by discouraging their more general cultivaⁿ of such trees ~~introduction~~—diminish the forage of the bees—The Wren and some other birds are very fond of the worms and immature young which are thrown out from the hives—and will sometimes seize upon them ~~even before the~~ while the bees are dragging them off from the alighting board—In Europe the wasp appears to be a great enemy of the bee—not particularly troublesome in this country. Mice sometimes commit great ravages in hives—they enter them in the winter season and often cause their entire destrucⁿ—The entrance to hives ought to be too small to allow the mice to get in—Ants are sometimes troublesome—especially the large black ant—but hives are seldom attacked unless they are diseased—To guard the bees against their enemies let them be kept in well-made hives and so managed as to be kept strong in numbers—they will then be able with judicious care on the part of their owner, to defend themselves—

Exhibition - My Observing Hive wh. can be put into a box - the very thing for exhibition - a travelling Apiary - &c -

Economical Considerations.

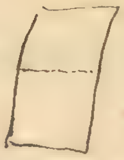
There are few if any cultivators of the bee in this country who have very large apiaries and who make the keeping of bees a business of great importance — If a swarm of bees "does well" it yields a very large profit to its owner. What is the reason then why the business is not prosecuted on a large scale? Many are of opinion that only a very limited number of swarms can be kept to advantage — The experience of large cultivators shows that this is a mistake — (Dzierzon) I shall now proceed to give what I suppose are the real causes why in this country wh. is a Paradise for bees, we see so few who have succeeded in establishing large apiaries —

Exposure — Have seen hives which were exposed all last winter without bottom boards — (suspended) — without covers of any kind — healthy but not very strong —

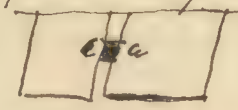
[illegible] Bees — Try to get some of these from Brazil — larger than the common bee — may be able to work on the white clover —

To secure up-right frames — Fasten a small string in the staple and then (keeping it on a [illegible]) wind it twice over the projecting end of each frame, and pass it through the staple on the opposite and further end — do the same thing on the other ends of the frames — pieces of lath or strips of board may now be laid over the tops of the frames and honey-board secured and all will be firm —

Frames — April 20. 1860 — Let there be a thin partition running across hive thus —



It may be arranged so as to facilitate intercommunication — then let long frames be thus



— Can then take in and out — and perhaps when raising queens there might be some advantages — Instead of a partition there might be only a rod to rest frames on — but then danger of crooked combs — So rod — the partition of tin or sheet iron — taken out as soon as combs built — (a-a) cork — rotten wood anything warm to encourage bees to cross over in cold weather — doubt advantage of — but shall try —

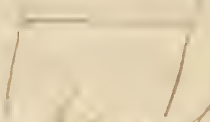
(March 23, 1861) Let piece of sheet iron or hard wood be fastened to front and rear of hive to project 1/4" above the rabbets On edge of this the frames might bear. Advantages (1) Less chance for bees to glue them fast (2) Great facility in settling down, or pushing frames — there being little danger of killing bees under them — Disadvantages — Seems more room over rabbets for comb — frames would not be so well adapted to transportation — In frames now used would leave too much space under them — Hives might easily receive this addition —

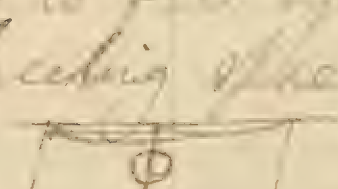
(March 28th 1861) Bevel to the rabbets top strips of frames with triangular guides (more such with [illegible] cross-bar would be the top) so the edges of the triangle the [illegible] tops of the frames may rest — they would be firm — and be very convenient to handle —

(May 14th 1861) — Double rabbet the ends — that is leave a strip about 1/4" wide and 3/8" or 5/8" deep on the inside edge of the rabbets — on this the frames would rest securely and yet no risk of the [illegible] of pinching bees — This hollow or trough would make a splendid feeder! It might be [illegible] and have a piece of wood to put in when not wanted — say in the [illegible] — a [illegible] a place for water — a syrup — ye flour a [illegible]! It would hold plenty for stimulating spring feeding — This contrivance seems to me to be [illegible] valuable. By this means [illegible] the bulk of the frames I get rid of [illegible] of the great objections of the frames — (16th) Holes may be bored in the bottom of trough with 1/2" augur for letting [illegible] feed — [illegible] (18th) Bore holes or make deep trough [illegible] length of rabbet — leave a ledge on each side for the [illegible] tin or sheet iron [illegible] would be convenient for me—

(July 13th 1861) Bradding tops of frames— If frames had tops with brads or staples 3/8" deep to keep them so far apart— could not be brought close to get enough play to remove first frame— I have now devised a plan to secure this desirable end— Let frames from the back or front and rear have 3/16" play— put brads on tops as near the ends as possible— To get room— start one frame from front to rear— next, from rear to front— next from front to rear— next from rear to front &c— the brads of alternate frames will be kept by the ends of the adjoining frames, so that any other frame can be brought as near as though they had no brads— and thus all needed room be given— These brads should all project just 3/8"— could none need to be brought nearer each other by irregularities of building it is necessary to keep them from the [illegible] or from [illegible] [illegible] of course a key in the way— This seems to perfect the stuffing & bradding of the frames— and they do not [illegible] interfere with the [illegible] frames — See far [illegible]

(Feb 15/1862) The [illegible] of [illegible] frames [illegible] [illegible]

Frames 3/ consisting of  style of frame— It cannot be relied on to secure winter passages— The [illegible] of the [illegible] have [illegible]— does not always leave the bees to pass [illegible]— the centre [illegible] [illegible] [illegible] and breeding space of comb [illegible] [illegible] [illegible]

Pr[illegible]  with [illegible] [illegible] [illegible] [illegible] [illegible]— [illegible] drawing— Why not brad only front of frames of the tops to be bradded too! then [illegible] from rear to front always so as not to crush bees. This would give more motion to frames to get them nearer for comb to [illegible] the [illegible].

To [illegible] [illegible] [illegible] [illegible] [illegible]— put strip behind the frames on the [illegible] [illegible] [illegible] [illegible]— [illegible] [illegible] It is, however, very doubtful whether the bradding on the top edges will not be more troublesome than [illegible]. If the frames are to be moved any distance— it would be easy to [illegible] [illegible] [illegible] [illegible] and put in smaller brads to fasten frames to the [illegible]— (March 3, 1865) Why not this plan answer for [illegible] [illegible]— [illegible] paper corners each frame of these [illegible] [illegible] [illegible] just staples [illegible] only 1/4" to keep top of frames from sides of hive— Let these staples be longer than those for the [illegible]

See [illegible]

F

β3 See E w — Frames how to regulate distances apart See F's

a Frames - to facilitate manipulation with - See H. i

Frames Movable. The 3/8 space between the frames and sides of the hive will afford ample passage for the warm air of the hive and for the bees into the caund way when the upper part of the combs in the main hive are filled with honey and made to approximate so as to obstruct the air and the bees - they will have the most convenient way of getting up in that passage over the comb - or crawling through the bend —

Farmer's plan — $\overset{1}{\square}\ \overset{2}{\square}\ \overset{3}{\square}\ \overset{4}{\square}$ = Spring $\overset{4}{\square}\ \overset{2}{\square}\ \overset{5}{\square}\ \overset{6}{\square}\ \overset{3}{\square}\ \overset{1}{\square}$ = State when increased for storing honey from clover — $\overset{7}{\square}\ \overset{4}{\square}\ \overset{8}{\square}\ \overset{5}{\square}\ \overset{9}{\square}\ \overset{3}{\square}\ \overset{2}{\square}\ \overset{6}{\square}\ \overset{1}{\square}$ = State for buckwheat —

The first transposition must be made just before swarming - say middle of May - Bees may be driven from $\overset{2}{\square}$, $\overset{3}{\square}$ - by smoke - or shaken from bars - See that only one sealed Queen is kept in 2 and 3 - The later transposition must be made before the drones are killed - in this case half of the combs of the hive from which the bees are driven must be given to the hive into which the bees are put - If this plan is to be pursued by one not well versed in scientific management - it will be well to meddle not at all with the Queen cells. Proper storage room being given - the hives will not swarm - except perhaps $\overset{2}{\square}$, $\overset{3}{\square}$ which rear the new Queens - Casts from these may be united - If the Apiarian is timid let him have a sprinkler with honey or sugar water and sprinkle the bees as soon as the cover is taken off - or a little smoke - which will not attract other bees - This much easier than to drive out - 15 or 20 minutes will answer to a hive - In this way clover honey may be harvested - and yet bees may be rapidly multiplied where Fall food is abundant - A fair day should be selected - a warm day - and the whole thing may be done up at once - If there are no Fall supplies the second transposition must not be attempted - unless rapid multiplication is aimed at by feeding -

The weather must be such that the brood will take no chill - but little or no chance of admission of air to the hives with brood until the bees from changed hives are in —

This plan united with clipping the wings of all Queens as soon as they begin to lay and removing Queens - in their third summer - Removed Queens might be put with two or three combs and bees into Queen Palace - and used next season - when they may be destroyed - The swarms of [illegible] may have be driven into a box over their hives - with or without movable frames - This may be set over the empty hive - they will build in this - some honey but soon descend below - This the plan to get the most honey - By 4th Made swarms from old hives established on this plan - by day -

Frames to page Sec 2 a (8) 1868 —

March 4th. 1852 — Entrance like my flap hive — A box screwed down to B. B. Farmer's hive — Two round holes in the sides — for flap — the pieces coming out are used as covers — one in the back — Box dovetailed — inch and a half stuff. Bottom Board full inch when worked — 24 × 25 — Lifting [illegible] the way with hollow space below very unusual protection can be given to the bees in winter fill in with dry leaves &c The corn caps on B.B. — strips prevent air from ascending — a little saw dust chaff &c will make all air tight — straw manure [illegible] front and rear will exclude frost —

March 5th. 1852 — Box dovetailed — 22 × 20 × 13 — when finished sawed so as to secure hive and cover for Tumbler board — Ends with holes as in hive — half inch pieces put in 1 1/2 inches from front to rear — in a rabbet on the ends — to give a space of dead air — The upper box may be hinged on — In winter should be filled with ~~dead~~ leaves — hay — straw &c — The hollow space front and rear might be filled with fine charcoal &c — The ends will not need so much protection — If one bar from each end was taken out then a divider might be put down and the vacant space filled with hay &c This should always be done when the bees have not filled their hive — A hive made on this plan would be exceedingly durable — and would afford great protection — and yet be not very expensive — It might be made cheaper by some other way than dovetailing — but not so thoroughly —

It is obvious that the honey may be taken from such a hive either from the bars below or in boxes, tumblers — flower pots &c above —

March 8th. 1852 — This is the plan for general use — The box may be put together with [illegible] strips in corners — front and back pieces one inch — dead air space may be filled with fine charcoal &c — Rabbet for frames ~~3/4~~ 7/8 inch — this avoids all the necessity for such very great accuracy in construction — and enables a farmer to make his own hives — He measures from outside to outside — so that any slight variations in the inside will not interfere with his frames — He may make the hive for say 15 bars and take all the space he can in bars — The ~~last~~ & One or two bars next to ends may in all cases be taken out — Divider run down — space filled with hay &c Hive may be taller — box with frames above — frames just like those below — this will be a good place for some of the hives — to get abundance of white comb — Upper part hinged with movable hinges — Tall hive ought to have only ten frames —

August 1865/ Corn cobs in a receptacle of any kind that can hold honey or syrup—the best of feeders! much better than straw or a float of wood— See J'l—1868

Feeding of Bees. Proper time for feeding small swarms. ~~Feeders~~ as soon as they are hived—that they may build sufficient comb for rearing young bees—then if they do not collect a store for winter—they will be worth Fall feeding.

Feeder— A water feeder may be made of glass or glazed ware—this will be next in importance to a honey feeder—Pure water ought if possible to be always accessible to the bees in their hives—as it will save them a vast amount of labor—and in bad or windy weather save the lives of many bees—A honey and pure water feeder may be combined—The bees accustomed to find water in the feeder—when they are shut up or are moved from their familiar spot to make etc. Swarms will never suffer from the want of water.

Honey and Water Feeder Sep. 20. 1851)

Ventilating Honey, & water feeder—Sep. 22

In winter this will answer the purpose a gentle current of air through the hive to carry off all moisture.

Sugar Candy. A most excellent winter food for bees—if it can be given as in my hives from above—May not sugar candy be a good thing to feed to bees to keep them at home when they are tempted for want of natural supplies to go to confectioners &c

Bees, in my hives when fed in the Fall if their hive is not full of comb will often use a large part of their feed in comb-building—instead of storing it up—This prevented by inserting divider—or they may be fed scantily and the balance supplied with candy— If colonies need supplies in order to carry them through the winter they should be fed as soon as the fall food supplies begin to fail—say the latter part of August— If the feeding is delayed too long the cold weather may come on before they have sealed over their supplies—Unsealed honey is very apt to become sour unless in a—

of the most common causes of dysentery— It is always better to feed from the top as the heat of the hive ascending will keep the food warm and it may be secured against all danger of attracting robber bees— The Apiarian should feed liberally and endeavour to have them deposit in their hives in as short a time as possible all that he judges necessary. During the whole time that they are fed they are excited to unnatural activity and consume much more than the usual quantity of food— It is best to feed at night— If the Apiarian has honey in bars it will be much the best way to introduce these into the hives that need additional supplies. By the use of my hives with movable bars— the spare honey of strong colonies may very easily be transferred to ~~needy~~ needy ones— Pure honey is the best food that can be given to bees— ~~If it has~~ West India honey will answer a very good purpose— If it is candied it should be brought to the boiling point ~~then it [illegible]~~ It is a great mistake to add much water to it— The bees are averse to sealing over their stores until the heat of the hive has evaporated the water from their honey— they act as tho' they knew that thin honey was liable to sour— Fed honey ought to be but a little thinner than honey pressed from the combs— If when the honey has reached the boiling point some half its weight of sugar be added it will make a very good food— Winter feeding should in all cases if possible be avoided— In hives constructed as mine are ~~the top of the hive may be removed~~ and plain sugar candy may be put between the top and the bars— I ~~have always been~~ am an advocate for moderate feeding in the Spring— It is sometimes necessary to prevent the bees from starving— and if judiciously done is a great stimulus to early breeding— Feeding must be done with care or else robbing will be encouraged— and feeble colonies be ruined instead of strengthened. (English recipe for feeding.)

The taking honey in frames from stocks wh. have more than enough and exchanging it with the empty combs of destitute stocks helps both— too much honey in the Spring interferes with breeding— Being able to feed so easily with honey in the comb or liquid or sugar candy— stocks may be kept without large supply— so that they will do all the better for breeding early and powerfully— Get the early, strong bees and they will get the honey— without being a bill of expense to their owner—

Winter & early Spring stimulating feeding – Journal – Oct. 28th 1879 –

Friendship, subsisting between Christ and the Apostle John – most beautifully depicted. Hall. Vol 1. P. 209.
Do inculcation of not neglected in New T. Do. P. 205

Feeding – for profit – The pure article fed to be stored in beautiful jars – may answer – should be done after the gathering of pure honey is over – As bees will not fill above until their hive is heavy below – give them a cheap article until they are full below – Tumblers may be taken away before they are sealed – made from cheap honey – the wax will be pure and will not cost as much as that fed from a more costly article – these tumblers may be set where bees can take out the honey – then may be placed on hives to be refilled with a pure article – Hives which have been thus treated will have spare honey below which in Fall or Spring should be removed to feed weak stocks –

May 21st 1852 – Let sugar water (will not by scent attract other bees) be always on hand to be sprinkled on bees whenever in the least disturbed by opening top cover – Smoke disagreeable – they soon regard any approach as an injury – but if always fed a little when disturbed – they will regard approach as a kindness – pour a little into the tumbler hole before opening – sprinkle as soon as you open –

June 17th 1852 – put strip in winter to keep frames farther off from bottom board –
July 1st 1852 – Let hives be so fixed that when bottom slanting back they will hold liquid honey – then towards evening pour the requisite quantity through one of the holes of the tumbler board – if this plan will answer it will be by far the most expeditious – ~~bees will~~ this will answer in warm weather – in cooler weather feed as usual from above – or give sugar candy – If number of bees small so that they do not build comb feeding will prevent breeding – as they will fill the cells – If candy is to be fed in the winter it will be best to raise the tumbler board on 3/8 strips – so as to give ample room –
July 17th 1852 – Pour the feed in by a tin spout towards away from the mouth –

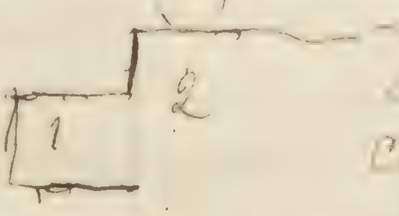
Fecundation of Young Queens — Always danger of Young Queens on their return mistaking their own hives — If the hives are all as they ought to be exactly alike — if they are on 1 same level and close together there will be great danger of mistake — Let the hives from which 1 young Queens are to sally be carefully made to differ — if they are white put black [illegible] in front — if black white — or make them differ [illegible] [illegible] —

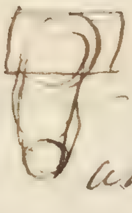
Apr. 29. 1862

Frames — how to regulate distances apart, ~~and to keep~~ in direction to [illegible] — Flaw of not confining them to place is that careless persons get them displaced. Suppose this was stopped with staples stuck in so as to keep them [illegible] — [illegible] [illegible] [illegible] [illegible] removed — or bind the frames fast to the rabbets —

August 11th — 1865 — To facilitate manipulation of frames —

Rounding my frames (notwithstanding the ground rabbets) have too much bearing on the rabbets; Might they not be improved thus — the projecting part only 1/2 an inch wide — [illegible] more [illegible] [illegible] to seize frames — [illegible] [illegible] [illegible] [illegible] [illegible] the whole this would be an improvement — (12th) Have tried some frames thus cut and am delighted with them — often will be able to remove frame without first prying it up — fingers get such an admirable hold — If necessary to pry — give a better chance than ever [illegible] — This seems to me a very great improvement — one which will greatly facilitate all manipulations with the frames. April 29th 1868 — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] on [illegible] [illegible] [illegible] in an old [illegible] [illegible] [illegible] [illegible] [illegible] — put more cells in [illegible] — If [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] in side of [illegible] ~~[illegible]~~ [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] would be kept warm —



April 11. 52 – Flower pot – for tumbler  – comb fastened on to glass – when removed cut from sides and comes out whole on glass – see from upper glass when full –

Journal for July 18th 1860 [illegible] 48° – 56° [illegible] cold – [illegible] from [illegible] – [illegible] but [illegible] little – [illegible] by [illegible] – [illegible] – [illegible] of [illegible] – [illegible] to encourage their breeding – Sees red clover about ready to blossom – [illegible] 19th – 46°! How [illegible] sealed in [illegible] – 28th [illegible] queen of [illegible] with a good number of [illegible] comb – [illegible] eggs – On the 1st of July one cell was sealed – ~~[illegible]~~ +sunrise of July 8th [illegible] queen hatched – [illegible] day the other hatched (These queen cells were made [illegible] the queen [illegible] 14½ days from the egg – [illegible] (18th) 45°! [illegible] – Three large colonies deprived of queen gone when no steps to replace her – (19th) – 54° – Sun very hot – bees very busy on white clover – get but little honey from it – (20th) [illegible] cloudy – A large colony deprived of its queen [illegible] 18 more [illegible] of the queen [illegible] – [illegible] of queen cells [illegible] after we [illegible] queen has [illegible] – Beautiful [illegible] a queen hatched – [illegible] before – the [illegible] she was still quite pale! removed her [illegible] in [illegible] then two hours another cell opened [illegible] of queen [illegible] opened it – [illegible] – [illegible] accepted it – [illegible] (21st) Cool – cloudy – In two instances saw young just ready to hatch [illegible] cells [illegible] – In [illegible] attention to the queen [illegible] – Delayed queen [illegible] by the bees [illegible]

O F

[illegible] white [illegible] — Could see [illegible] 3rd day [illegible] — 25th [illegible]
to a strong colony [illegible] comb [illegible]
[illegible] by [illegible] — [illegible] saw a colony [illegible]
the [illegible]
a queen or some of the [illegible] — and they [illegible] come off victorious — It seems [illegible]
to [illegible] for bees to [illegible]
queen [illegible] — (24th) [illegible] — Colony yesterday [illegible] honey — This [illegible]
[illegible]
[illegible]
made by "lopping" her 18 queen cells — [illegible] 8 in one [illegible] piece [illegible]
The colony had a large number of sealed queens [illegible]
[illegible] — [illegible] Three Cage queens have already hatched
15 minutes after an examination [illegible] queen cell — had [illegible]
[illegible]!! [illegible] 15 minutes [illegible]
[illegible] queen [illegible] eggs yesterday [illegible]
[illegible]
[illegible] queens [illegible] — Am satisfied that I have made an important discovery
To day at 12 M — I took a queen out of a cage (24 hr) stock and put her with bees enough to make
a good colony into a hive [illegible] plenty of honey and comb [illegible] — [illegible]
of [illegible] (this year) [illegible] — I
could see no eggs at 2 3/4 P.M. — but queen on comb evidently intending to lay — at
3 1/2 P.M. — [illegible]
[illegible] queen [illegible] — A few hours later queen that was
so [illegible] admired [illegible] young queen — A queen [illegible]
[illegible] cell [illegible] — 25th
Hot with beautiful showers [illegible] — [illegible] queen [illegible] the side
of her cell — [illegible] yesterday [illegible] to day [illegible] young queen [illegible]
of [illegible] having sealed queen cells [illegible] — Gave a queen just crept out to a
strong nucleus with six sealed queens — put her at entrance — [illegible] up when [illegible]
her — in a short time found her at work on the queen cells — [illegible] young queen hatched
yesterday [illegible] with eggs [illegible]
[illegible] — in a short time found queen with bees
[illegible] — The discovery I have made as to the [illegible]
by just hatched queens very important in practical bee-keeping — Removed old queen that
began to lay yesterday [illegible] — at 12 M. to day — Have caged a [illegible] laying queen to
see how long it will take her to [illegible] the eggs — (27th) [illegible]
[illegible] 28th [illegible] — [illegible]
[illegible] in the blossoms, Find some of the queens dead in cages in the queen nursery [illegible]
[illegible] queen [illegible] eggs [illegible] neglected
28th 54° — At 7 A.M. — [illegible] queen cell started [illegible]
[illegible]

s 1/89

Fumigation — may be easily done in my hives — the receptacle to make the smoke sh'd be placed in the box below — the draft by ~~opening~~ covering one of the holes on top with gauze will carry the smoke up —

Effect on bees — A little smoke before any important operation will make the bees quiet — or rather indisposed to sting — Rag or paper smoke sh'd be used and never tobacco — spunk or touchwood very good — Puff balls if it is intended to stupefy them — Cotton says rags dipped in nitre will stupefy

Feb 21. 1862 — My dark cellar will be a good place for putting some burning rags or paper — ~~to~~ when smoke is necessary in any operation —

The hives when fumigated may be set over a small box without top or bottom —

In this way bees may be driven out by persons who are timid — but in reality no smoke is at all necessary — a little sugar water for sprinkling them will answer every purpose —

March 15th 1868 The old Germans suggest building [illegible] of [illegible] near the tops so that they cannot get close down to crush the [illegible] the distance between them — The bars should be [illegible] [illegible] — should project 1/4" so that same gauge as [illegible] they could not get nearer to each other than 3/16th — These bars sh'd be put so that they will set in openings of Guide Frames possible that poor feeding or breeding may affect the color of workers as well as queens? I have had quite a number of the 19 queens removed in cells — for watching — their combs were very carefully handled [illegible] the [illegible] queen — that [illegible] very [illegible] in the day — eggs [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] very [illegible] on honey — [illegible] bees [illegible] plenty — [illegible] honey [illegible] on [illegible] weed — [illegible] in [illegible] [illegible] covered up [illegible] — [illegible], [illegible] very [illegible] — Saw Italian bees on red clover. I [illegible] one caught had bag pretty filled with a pretty honey — (29th) 58° — Bees very plenty on [illegible] [illegible] bee [illegible] — Drone laying queen caged a week [illegible] let out yesterday [illegible] [illegible] — [illegible] [illegible] [illegible] queen — [illegible] [illegible] no eggs yet — Made a [illegible] by [illegible] — [illegible] [illegible] it — very [illegible] — [illegible] they [illegible] it honey — they [illegible] [illegible] the one made a few days ago — [illegible] [illegible] [illegible] that they had got [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] honey — By noon [illegible] bees on [illegible] — [illegible] made [illegible] that had [illegible] young queen [illegible] found to be [illegible] queen cells! [illegible] queen [illegible] [illegible] [illegible] with [illegible] [illegible] — A [illegible] queen fell [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] one of the bees, [illegible] — 30th. Last night rain [illegible] gentle, copious [illegible] rain — The honey was not taken from that hive yesterday — but this [illegible] [illegible] [illegible] [illegible] exposed — bees attacked it again and [illegible] probably got all the honey — [illegible] [illegible] [illegible] they [illegible] [illegible] all the [illegible]! [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] whipped — Bees [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] honey — the [illegible] [illegible] [illegible] [illegible] [illegible] very [illegible] [illegible] — [illegible] [illegible] crowded with brood and weak in honey — Let out an unfertile caged queen and caged [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of their queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] that queens can be [illegible] [illegible] [illegible] this way — Drone laying queen was dropping an egg when I [illegible] [illegible] [illegible] [illegible] in cells — (31) Cloudy — [illegible] — The queen caged yesterday dead in the cage — [illegible] very [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] of [illegible] [illegible] [illegible] by their [illegible]. They did get all the honey from that hive —

August 1st — 70° — this A.M. at 6 [illegible] — found in the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] apparently just sealed [illegible] — [illegible] queen cell almost sealed — at 7 [illegible] — this queen cell sealed. Since these eggs could not have been layed before 30th — A queen cell [illegible] may [illegible] [illegible] sealed [illegible] at least 7 days, 15 hours — [illegible] the egg [illegible] [illegible] in 21 hours — but [illegible] [illegible] [illegible] [illegible] [illegible] that [illegible] in the development of the larvae — Another queen cell sealed [illegible] [illegible] same hour [illegible] [illegible] — saw a number of Italians on red clover — [illegible] [illegible] [illegible] pretty honey — Bees abundant on tassel of [illegible] [illegible] [illegible] [illegible] [illegible] they get honey —

August 1st, Hot — bees plenty [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] morning [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] than the [illegible]

Glass — If glass is used for storing surplus honey - its coldness is a great objection — but if a cover be put over in cool weather it will obviate this objection — in very hot weather glass is the best material —

Glass hives — Glass may be cut into suitable sizes — and pasted in the frames of hives — the sizes may differ so that in cool weather the smaller hives may have a larger one placed over them — Glass hives may in this way have great protection given to them — The hive may be small — then a larger one cover — then a larger one still — [illegible] is the greatest [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] honey — [illegible] (5th) Very hot [illegible] [illegible] [illegible] bees more upon it — Do not think [illegible] follow it up larger than Stock bees because of their [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] very easily detached from legs — caught going into hive have a very [illegible] kind of honey — [illegible] made July 28th [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] It is [illegible] that young queens [illegible] [illegible] in this [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]; A [illegible] [illegible] the [illegible] for 15 days — Am feeling & [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to encourage drone breeding — (4th) 68° — A [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] that the queen has been removed! Bees gathering [illegible] [illegible] [illegible] [illegible] for a long time [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] red clover — Seen very hot — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] thunder — hail — very heavy shower with wind — in half an hour or less [illegible] [illegible] rain fell [illegible] [illegible] other night — [illegible] of it nearly [illegible] [illegible] [illegible] (5th) 70 82° Thunder nearly all day — showers passing all round — Bees active on corn — at work on honey only early and late — so late to day that I could hardly distinguish them on the [illegible] — Bees [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — A queen [illegible] days [illegible] — has not layed [illegible] [illegible] [illegible] [illegible] days — 6th 70.82° [illegible] [illegible] [illegible] weather — [illegible] [illegible] [illegible] at midday — [illegible] [illegible] [illegible] — A queen 18 days old just began to lay — another [illegible] 9 days old [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] not laying [illegible] [illegible] days [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — (7th) [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] in queen cells — [illegible] [illegible] [illegible]

21

March 18th 1852 – Or outside be wood dovetailed – & strongly fastened – inside glass – space between glass and wood – front and sides filled with charcoal – a good non conductor – both double glass to give a [illegible] Glass for a lining better and cheaper than any thing else –

March 20 – Bottom board might have glass on the inside – tin, zinc? [illegible] I attach very great importance to the use of glass as an inside lining it enables me to obtain all the advantages of double glass – (very excepted) and other additional important advantages – Hive needs no outside cover – may be made stronger – lighter – simpler – cheaper – more compact – the doubled space may be permanently filled – with the very best non-conductor – and the hive made warmer – The corners are all to be filled with putty – so that the smallest possible chance is given to the bee moth – The bottom is to be thoroughly painted with the metallic paint – which gives it no chance there – The top of the hive in the cold weather is filled with straw &c the back may have a little cotton or something of the kind between the glass and the wood cover in the cold weather – The hive is to stand over a dark – space &c – It will thus be able to defy all the attacks of cold – or heat – 29th Top part hinged so that when the hive is unlocked it may be unhinged – but not when locked – cover of the back hinged Top locks in this – Frame projects up so as to form a rebbet – Sides and Top are bevelled – sides on the Bottom board rebbetted – no joints left exposed – This pleases me better than anything yet – Model for the patent office ought to be made in this way – Specifications should describe this hive – Compact – simple – durable – neat – &c

the honey when made (11th) – had a very large number of sealed and unsealed queen cells – Found 25 sealed queens in one large stock deprived of its queen – (8th) Hot – close – muggy – put two unhatched queens with a cage [illegible] – grasshoppers have [illegible] – queen hatched from colony of 24th – just 15 days after queen laid any eggs – and two hours now – In two full colonies a queen hatched in three or four hours before full two days after the hive lost queen – [illegible] queen cells [illegible] I feel [illegible] 9th 70. 82 – Lime bugs – (10th) 70° – Have had many queens hatch yesterday and to day – From [illegible]

[illegible]

Gentlemen — On my plan bees may be kept as gardens, hives — by those who wish to have the pleasure without the labor — a practical Apian takes charge of a gentleman's hives for 1 season — just as a gardener of his garden — Hives of Queens clipped honey taken — comb changed — &c &c This I believe will greatly extend bee keeping —

Some queens hatched by packing bees about with fine heat — one case a queen when the cap was hanging down — one when capped taken off sealed [illegible] — [illegible] opened [illegible] for four times! even after the queen has hatched and has her liberty — Some queens have been hatched [illegible] [illegible] before [illegible] [illegible] queen cells — the season has been [illegible] that common drones are [illegible] — and I [illegible] [illegible] [illegible] [illegible] [illegible] a very good [illegible] to hatch fine queens — [illegible] young queens seem to make [illegible] — [illegible] [illegible] [illegible] — Beautiful shower this morn — Golden Rod roots that I set out seem to be spreading — Smell of buckwheat about the hives pretty decided this day — A colony from [illegible] has been queenless — bees have attempted to rob it — gave them [illegible] [illegible] — to day they began to get the upper hand — queen at [illegible] they conquered the queen) and shut it up — cause — all the stop [illegible] colony taken down hill — [illegible] with rain — few swarms this season — very few in number compared to the last season — (11th 70° — [illegible] made on 20th [illegible] queen [illegible] 28th [illegible] last queen hatched last night [illegible] — it was opened at [illegible] — last night — queen [illegible] [illegible] few hours [illegible] opened at 5 o'clock — [illegible] eggs [illegible] have been [illegible] the last eggs laid — Queenless at 12 M. on the 25th — if the egg was laid then this queen took 16½ days to develop — weather has been hot day and night — plenty of [illegible] — [illegible] young queens (just hatched) away from [illegible] two days — [illegible] (12th 62° — 80 Bees busily at work on buckwheat — [illegible] [illegible] young queen [illegible] hatched queen) [illegible] — Some splendid queens have hatched yesterday and to day — [illegible] young queen hatched yesterday — [illegible] — 5 P.M. — Two workers hatched in colony made on 24th July — just 19 days from time of eggs [illegible] the queen began to lay — weather has been hot day and night — the first queen hatched just 11 days sooner than the first worker — 18th — 62° „ 80 — Season that [illegible] buckwheat [illegible] to day — [illegible] of July 24th — workers hatching [illegible] — [illegible] queen cells [illegible] from [illegible] July 29th — [illegible] hatched [illegible] — early — had caged queen — and [illegible] the outside before the bees got hers; caged queen very much agitated — Bees [illegible] gradually — yet not all — Found many sealed and unsealed queens in colony [illegible] [illegible] [illegible] seen [illegible] eggs are four days after the queen is removed — the last [illegible] [illegible]

queen cells — found a sealed queen (alive) in a nucleus just raised young queen [illegible]

days — large quantities of a very bright yellow bee bread brought in early in the A.M. — (14th) G

62°..66° — [illegible] of the bees in [illegible] nucleus have hatched — [illegible]

[illegible]

[illegible] [illegible] 20 days 3 hours since the [illegible]

since any eggs could have been layed — the last hatched queen was on the outside circle — this

[illegible] from the egg — [illegible]

of [illegible] of queens and workers — Am trying to get queen in two strong nuclei to lay in drone combs so

as to [illegible] — Nucleus with drone comb queen [illegible] its [illegible]

[illegible] — Another strong [illegible] just [illegible]

[illegible] — (15th) 58°–58° — [illegible]

[illegible] — [illegible] difference in the [illegible]

one strong [illegible] — a colony of black bees [illegible]

number of queen cells in drone brood — very [illegible] a dozen — the [illegible] was new —

[illegible] — A queen

six weeks fertile, carefully avoids laying in drone cells — stock very strong — By 10 A.M. to day ate

[illegible] — Nucleus 24th — had thirty unhatched workers at 6 A.M.

[illegible] 13 at 5 P.M. [illegible]

[illegible] in all — Drones incline to fly late also young bees to play late such warm weather — [illegible]

the colonies are in the sun — bees found lying almost motionless on the sides and bottom

board — few in the combs — Queen in nucleus laid eggs in some worker cells in the drone

comb given [illegible] in the drone cells — Nuclei appear to be getting considerable [illegible]

(16th) [illegible]

[illegible]

at 6 A.M. had 5 unhatched workers — at 3 P.M. the last one was hatching — just 22 days

and three hours after the queen was removed — At 7 P.M. (15th) no drone eggs in the comb —

[illegible] (16th) a few [illegible]

[illegible]

[illegible] 66°..84° [illegible]

[illegible] must have been [illegible]

[illegible] comb building — 18th 70°

[illegible]

[illegible]

[illegible] — (19th) 62°..84° — very hot in sun — clear — wind S.E. — Little done [illegible]

[illegible]

20th [illegible] 2°.. [illegible] 95

[illegible]

Saw bees seize the queen she dropped away from — Queen that she lay when comb lifted out [illegible] drone comb did not examine cells at all — [illegible] the drone eggs were hatched. — (21st) 73°. 84° — [illegible] no [illegible] [illegible] [illegible] — [illegible] Have a beautiful queen of the 19th — [illegible] [illegible] [illegible] eggs [illegible] 35 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 4 days [illegible] [illegible] queen — queen [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] queen cells [illegible]

(22nd) 66°. 84° Bees were out on buckwheat — saw many an egg [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] this [illegible] as [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] proper depth!! A splendid young queen hatched too — Found two queen cells [illegible] [illegible] — The one mentioned on the 15th — [illegible] to examine for queen cells the [illegible] after queen is hatched — very sorry to lose such a splendid Italian queen — A slight [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 23rd 77°. 84° — [illegible] abundance for want of honey — (24th) 70°. 82° — [illegible] [illegible] honey [illegible] [illegible] a slight drift of honey at 7 p.m. 64°! Found queen of colony mentioned on the 21st — [illegible] a dozen [illegible] queens! could not see an egg! they [illegible] [illegible] [illegible] of the queen of 22nd — a drone was seen leaving [illegible] [illegible] a queen but do not [illegible] to [illegible] queen cell [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] after the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen cells — Saw plenty of sealed drones in another [illegible] colony that has been [illegible] [illegible] — Hope [illegible] [illegible] [illegible] [illegible] — (25th) 54°. 68° [illegible] rain [illegible] [illegible] [illegible] [illegible] queen [illegible] yesterday — [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible]! Removed a queen and gave another with cage [illegible] a little [illegible]!! [illegible] [illegible] [illegible] out [illegible] [illegible] out queen to-day I [illegible] [illegible] [illegible] the [illegible] of comb lifted out of hive — [illegible] [illegible] — 26th 46°. 68° — almost a frost — [illegible] [illegible] eggs after the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] honey — Queen of colony [illegible] 21st [illegible] which queen cells [illegible] [illegible] is laying [illegible] [illegible]. [illegible] the eggs in worker drone combs were removed by the bees. The [illegible] [illegible] [illegible] [illegible] from a colony with a drone laying queen [illegible] [illegible] [illegible] [illegible] — found a dozen eggs laid centrally [illegible] [illegible] about equal number on each side — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] is laying [illegible] [illegible] [illegible] — the [illegible] [illegible] [illegible] [illegible] — 27th 42°. 72° almost a frost. [illegible] [illegible] [illegible] in a colony that has [illegible] [illegible] [illegible] [illegible] [illegible] sealed drones [illegible] [illegible] — Golden Rod one specimen just blossoming —

84

Queen [illegible] by this [illegible] [illegible] [illegible] the queen – [illegible]
[illegible] [illegible] got out – [illegible] [illegible] queens [illegible] [illegible]

i G

[illegible] [illegible] very little honey –
[illegible] – [illegible] the [illegible] [illegible] the removal of their queens [illegible]
[illegible] – [illegible] [illegible] the removal of the
queen than [illegible]? I have been very much [illegible] to see [illegible] of many
[illegible] no marked [illegible] [illegible] the queens have been removed –
Dinner in the 18 frame, [illegible] colonies [illegible] [illegible] – in one [illegible] off [illegible] to [illegible] – Had
removed from [illegible] some days ago [illegible] [illegible] with hatching [illegible] [illegible]
to which many queens – (28) 58°. 70° To-day removed all the queen cells from these 2 hives and
gave them brood to start again – hoping in this way to procure [illegible] which
are very [illegible] – [illegible] [illegible] these [illegible] [illegible] to get [illegible]
them [illegible] of queens – [illegible] [illegible]) – hoping to [illegible] [illegible]
[illegible] in [illegible] – Am rearing most of my queens in large [illegible]
very few [illegible] – [illegible] very beautiful – It being a very poor season for honey
It seems to me that the [illegible] have done very [illegible] better than the [illegible]
not the [illegible] which [illegible]; the colonies which have been [illegible] have [illegible]
[illegible] – [illegible] colonies to [illegible] a good [illegible]
winding up with a [illegible] supply of [illegible] for winter [illegible]
[illegible] – Heavy thunder, [illegible] [illegible] 29th 60° – Very cold
rain at daylight – [illegible] – [illegible] most of the day – 54° [illegible]
56° at [illegible] – 42° at 10 P.M.! a clear cold [illegible] – [illegible]
[illegible] the Lord [illegible]! [illegible]
queen [illegible] the [illegible] (30th) 35°. 60° – [illegible] 32° – [illegible] 40° [illegible] –
[illegible]
[illegible]!
(31) 37°. 60° – [illegible] – [illegible]
[illegible] to [illegible] queens [illegible] – [illegible] some
[illegible]
[illegible]! [illegible]
[illegible]
[illegible] – [illegible] I [illegible] four or five times a day [illegible]
[illegible] not to [illegible] other [illegible] a little at once that it [illegible] soon be taken up –
[illegible] queen cells [illegible]
[illegible] queens [illegible] – (1st) 42°. 55° – [illegible]
[illegible] – [illegible] seem [illegible] to [illegible] the bees [illegible]
[illegible]

[illegible] 85° — Give up to a queenless and hopeless nucleus — [illegible]
[illegible]

G O

[illegible] investigate on this point further — (2d) 52, 80° — [illegible]
[illegible]

Growth in grace. should be constant resembling the groth of a tree or plant. — Pres. Day 42°

[illegible] — (3d) 52, 76° — [illegible] — (4th) [illegible]
5 [illegible]
[illegible]
queens from Mrs. best queen (for brightness) [illegible]
[illegible] — (5th) 53, 56 —
[illegible]
(5th) 68°, 84° — [illegible]
[illegible]
Common queen of a large colony Sept. 2d — gave eggs for (48 hours) fertile queen — Sept. 9th no eggs — [illegible]
[illegible] 8th Eggs! and three more fertile queen cells! This colony has [illegible]
[illegible] (9th) [illegible]
[illegible] about one inch of rain — a truly blessed rain —

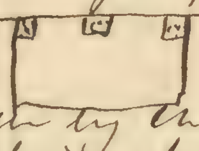
Colony so fine [illegible] on the [illegible] of the 9th — has a black queen that [illegible] [illegible] rather than [illegible]
up! I think I saw a queen [illegible] — Put two eggs [illegible] [illegible] [illegible]
eggs! — (10th) 84° — Had some [illegible] ○ and [illegible] [illegible] [illegible] **G** [illegible]
[illegible] a [illegible] — [illegible] [illegible] had been [illegible] [illegible] large — [illegible] very [illegible]
[illegible] — 11th — 82° — splendid weather for [illegible] and [illegible] — [illegible] can [illegible]
depended on — [illegible] — Many of the hives have [illegible] [illegible] breeding, which they have
not been [illegible] — If a [illegible] [illegible] to encourage [illegible] for winter bees — [illegible] a colony
[illegible] [illegible] — may [illegible] — [illegible] that these are not [illegible] [illegible]
Found a queen cell destroyed in a colony where queen was caged — Found some fine queen
[illegible] — 12th — Cold rain — not much drizzle — Had some splendid queens [illegible]
[illegible] queen sent to Mr. [illegible] — [illegible] in queen [illegible] on [illegible] stock —
(13th) — 72° — Cloudy — misty — (14th) Have had 7 queen cells [illegible] hatch from
eggs of queen sent to Mr. C[illegible] — the cells [illegible] and [illegible] [illegible] in the [illegible]
stock — [illegible] some [illegible] for [illegible] — These two queens large [illegible]
developed [illegible] — have a queen of like appearance in a [illegible] — (15th) 58°, 75° [illegible]
[illegible] — [illegible] all my [illegible] [illegible] — [illegible] ever [illegible]
[illegible] — The [illegible] have [illegible] the [illegible] — [illegible]
[illegible] breeding — colonies that have been [illegible] [illegible]
[illegible] and [illegible] the [illegible] —
(16th) 62°, 81° — Cloudy — put a little feed [illegible] — [illegible]
colony where queen has been caged two months raised [illegible] to replace her — much [illegible]
[illegible] queen [illegible] laying 2nd day of her liberation — [illegible]
[illegible]
[illegible] — (17th)
64°, 75° — Thunder in [illegible] — [illegible] — [illegible] —
rain fell in the night — a splendid rain — (18th) 52°, 60° — Cloudy, windy, rain —
[illegible] for colonies — much [illegible] — no [illegible] — (19th) 41°, 57° [illegible]
[illegible] last night — 10 P.M. Thermometer 36° and [illegible]
[illegible] already [illegible] with frost — sky clear — no wind — [illegible] 40° [illegible]
[illegible] a change of weather — the great [illegible]
[illegible] — [illegible]
[illegible] Thermometer [illegible] to [illegible] 10° [illegible] — at this hour
[illegible] 6° [illegible] that night — I [illegible] have been [illegible] to get [illegible]
the [illegible] I have [illegible] — (20th) 30°, 52° — [illegible] wind [illegible]
[illegible] night — a slight [illegible] frozen on the ground — [illegible] of [illegible]
[illegible]
[illegible] for [illegible] — (21st) 42°, 72° [illegible]
[illegible]

[illegible] queen — [illegible]

G [illegible] u [illegible]

July 1st 1857 — [illegible]

Guide comb — Prefer if I have comb to put in one as follows to be



most sure that all will be regular — very small pieces will answer by end — find that clean rosin makes by far the best attachment — it is not so easily affected by the heat of the bees — this is the best thing to run along all the corners in the hive to make all tight —

[illegible] with eggs have refused to [illegible] them and removed them from cells — [illegible] (22d) 86° 69° [illegible] one [illegible] of bees [illegible] to day a large number of eggs [illegible] [illegible] 25th 78° 72° — [illegible] if they [illegible] rolling — A nucleus feeble, with [illegible] very long — when examined [illegible] they had [illegible] [illegible] One nucleus very savage [illegible] (24th 48°. — [illegible] that savage nucleus [illegible] drone queen [illegible] queen has been confined 48 hours [illegible] wings of queen clipped [illegible] queen [illegible]

108 [illegible]

cells [illegible] all gone — Bees are beginning to [illegible]

25th — Sep 25th 1863 / 38° — 26th 34° — 27 34° — [illegible]
[illegible] day — [illegible]
28th 49° 72° — Rainy day — [illegible] in the vicinity
of College [illegible] just beginning to [illegible] out of the
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] — 29th 48° 72 [illegible]
[illegible] — 30th 46° 77 — [illegible]
[illegible] — Oct 1st 54° — [illegible]
[illegible]
[illegible]
[illegible] the [illegible]
[illegible]
[illegible]
[illegible] — (2nd [illegible] — [illegible]
[illegible] College [illegible]
[illegible]
[illegible] — 3rd 40° 60° [illegible]
[illegible] — 5th 33° 42°
[illegible]
6th 42° 84° — [illegible]
[illegible]
[illegible]
[illegible] — (7th 40° 44° — [illegible]
[illegible]
(8th 38° [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] — (9th 42° 35° — [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] Put [illegible]
[illegible]
[illegible]

101

"Lorging" process [illegible] little doubt that it might be made to [illegible] by [illegible] [illegible] [illegible] — [illegible] each colony [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to the [illegible] head — by [illegible] empty [illegible] [illegible] in its place to [illegible] [illegible] [illegible] [illegible] [illegible] empty [illegible] — if it [illegible] a very great [illegible] in [illegible] [illegible]
(10th) 40°–50° — Cloudy most of the day — too cool for bees to [illegible] [illegible] [illegible] from [illegible] stocks bees [illegible] honey — and have not [illegible] the [illegible] [illegible] [illegible] [illegible] to [illegible] — seem to [illegible] just like the "lorging" process — [illegible] [illegible] — If bees [illegible] [illegible] stronger bees or queen [illegible] [illegible] [illegible] that they decide whether bees [illegible] to be [illegible] or [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — Bees [illegible] [illegible] [illegible] [illegible] [illegible] to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — while the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — If bees do not [illegible] [illegible] [illegible] [illegible] [illegible] the colony [illegible] nearly all the [illegible] — (11th) 38°–5[illegible] [illegible] — (12th) 32°–53° — [illegible] — rain before [illegible] — (13th) [illegible] — Bees [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — (14th) [illegible] [illegible] [illegible] 40°–64° — Beautiful day, bees very active [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] a queen [illegible] — (15th) 44°–68° — Bees very active [illegible] [illegible] of the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — (16th) [illegible] 74° — Very warm [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] confident that the young queens of [illegible] that [illegible] them [illegible] — [illegible] them [illegible] in the [illegible] laying colonies — queens of [illegible] of those [illegible] [illegible] — they [illegible] had [illegible] [illegible] and [illegible] few [illegible] — [illegible] laying queens that [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] to [illegible] [illegible] — [illegible] to have in good or fair condition for wintering 95 of my 110 colonies — (17th) 52. 74 — Bees very much in flight — (18th) 58°. 64 — A good [illegible] [illegible] (for [illegible] — [illegible] — (19th) 42°. 52 — [illegible] [illegible] of [illegible] for winter [illegible]. In the last few [illegible] days the [illegible] had been [illegible] [illegible] largely [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] got [illegible] [illegible] [illegible] [illegible] [illegible] from [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Hedley [illegible] [illegible] [illegible] for the [illegible] [illegible] [illegible] — [illegible] [illegible] queen that [illegible] [illegible] [illegible] 9th [illegible] [illegible] [illegible] 12th [illegible] [illegible] [illegible] another — [illegible] [illegible] [illegible] [illegible] [illegible] off [illegible] honey [illegible] the [illegible] [illegible] the queen [illegible] [illegible] they had a very large [illegible] of bees [illegible] — [illegible] [illegible] which the queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the [illegible] for [illegible] [illegible] [illegible] [illegible] — [illegible] to them — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — 20th 32°. — [illegible] (21st) [illegible] — [illegible] — (22nd) 30. — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] and [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] on the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Hedley [illegible] [illegible] [illegible] — [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — I believe that [illegible] [illegible] [illegible] in the [illegible] [illegible] which they [illegible] to be [illegible] in the [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] be a perfectly successful way of wintering colonies — A queen [illegible] in a nucleus [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] a few [illegible] [illegible] 5 weeks after her birth! A [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 38. 56 [illegible] [illegible] — [illegible] [illegible] [illegible] — [illegible] in [illegible] large 18 frame [illegible] the [illegible] [illegible] [illegible] [illegible] a [illegible] large [illegible] of [illegible] — the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] (24th) 35. 40 — [illegible] [illegible] [illegible] (25th) 34. 46. (26th) 30. — [illegible] [illegible] [illegible] [illegible] a queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] a nucleus [illegible] which [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] soon began to lay eggs in the old [illegible]! [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] two days [illegible] [illegible] Queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] from what [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen laying [illegible] in the [illegible] — (27th) 30°. 46° —

[illegible] out — Bees [illegible] to a black which had a few days before [illegible]
[illegible] — after [illegible] them in — [illegible] at [illegible] of I [illegible] to [illegible]
[illegible] — Before [illegible]
[illegible] were almost always if not always [illegible] — By this very [illegible]
this principle [illegible] perfectly to introduce queens!!! [illegible] in [illegible]
they are [illegible] and [illegible] — The [illegible]
[illegible] — (26th) 27° 40° — Beautiful day — [illegible]
black [illegible] that she [illegible] her [illegible] the honey
[illegible] — One black [illegible] of [illegible]
[illegible] for this — [illegible] of the honey [illegible]
the [illegible] in [illegible]? [illegible] certainly [illegible]
to [illegible] in the [illegible] — [illegible] part of the [illegible]
queen — [illegible] out [illegible]
(29th) 32° .. 61° — Beautiful day [illegible]
[illegible] — the [illegible] after [illegible] a pretty [illegible]
of queens — [illegible] that my two Italian Queens [illegible]
to be shipped Oct. 15th — [illegible]
[illegible]
[illegible]
[illegible] to [illegible] on [illegible]
[illegible] (30th) [illegible]° — [illegible] last night [illegible]
[illegible]
[illegible] — (2nd) 32° 36° — [illegible]
[illegible] (3rd) 36° 46° — Pleasant [illegible] — (4th) 40° 70° — [illegible]
[illegible]
[illegible]
[illegible]
[illegible] black [illegible]
[illegible] (5th) 46° .. 60° — Beautiful day — (6th) 72° — [illegible]
[illegible]
[illegible]
[illegible]
[illegible] — (13th) [illegible]° [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

1864 Jany 23 – Journal interrupted from usual cause trouble – Dec. 31
was warm – 5 1/2 P.M. – 42° – 6 1/2 – 32° – 7 1/2 – 22° – 10 1/2 + 8° – [illegible]
Jan 1st – 7 A.M. – 16. 2 P.M. – 10 – 9 P.M. – 12 – and an awful wind –
[illegible] for 12 days – [illegible] in [illegible] – the 1st day at
[illegible] 11 – 2 P.M. + 21° – 9 P.M. + 46 – [illegible]
Bees [illegible] – some stocks have starved – they [illegible]
[illegible] honey – and to save my stock
I must [illegible] to feed – many are [illegible]
only one [illegible] which honey is here – [illegible]
[illegible] – the [illegible] queen [illegible] – [illegible]
[illegible] – But few stocks [illegible] any brood – [illegible]
[illegible] – the bees appear very healthy
[illegible] – there is
[illegible] – It is now [illegible]
a very heavy fall of snow on the ground – [illegible]
[illegible] to have [illegible] more [illegible] – Have reason to think
they could not have [illegible]
that the destruction of stock in the country generally will be
fearful – (24th) 44°.. 49° – Clear – S.W. – (25th) 40.. 60 – Clear S.W. – Find
a number of stocks dead – a few which had no [illegible]
with plenty of honey – most [illegible]
[illegible] on the day [illegible] to know the best [illegible]
all the stocks – much feeding and [illegible]
to save the bees now alive – [illegible] to do [illegible]
[illegible] (26th) 34°.. 46° Clear – Find many stocks almost out of honey –
a number have died within a week – a number with only [illegible]
bees, but queens all right – All the strongest have [illegible] brood – [illegible]
[illegible] that [illegible] – have most honey – few old [illegible]
that [illegible] – and bees have been more quiet – Splendid weather for
[illegible] and bees flying [illegible] not [illegible] from feeding (necessary to [illegible]
[illegible] of cold weather had continued – (27th) 32°.. 56° Clear – Find to day a
number of stocks without a drop of honey – bees so very eager to rob that it is
very difficult to feed – fear I must lose a number more – (28th) 34°.. 60° –
Clear – for the last week days almost cloudless – calm – Too warm to day
to do much with bees – so eager to rob – Will be glad to get a number
of the weakest into [illegible] – very difficult to do anything or
to know what course to pursue – very difficult feeding when [illegible]
needed to [illegible] most of the stocks now alive – [illegible]
few days ago –

(30th) 32°..51° – Hazy some – Many stocks here only food as I give it to them day by day – Am arranging them as fast as I can so as to be able to [illegible] comb of a [illegible] next to the [illegible] of their cluster – [illegible] engaged to [illegible] [illegible] to do [illegible] after [illegible] [illegible] [illegible] – (30th) 46°..58°. [illegible] [illegible] last night with heavy showers – [illegible] part of the day [illegible] [illegible] placed on [illegible] board – If weather becomes cold [illegible] [illegible] [illegible] one with pieces of old carpet or old clothing – and try [illegible] [illegible] [illegible] [illegible] quite [illegible] – if other plans fail – [illegible] [illegible] [illegible] [illegible] [illegible] of my stocks – but [illegible] [illegible] [illegible] [illegible] [illegible] – If I had [illegible] up one half of my stocks last [illegible] [illegible] [illegible] to [illegible] past winter & [illegible] but [illegible] [illegible] [illegible] [illegible] [illegible] much better!! (31st) 34°..60° Cloudy [illegible] rains [illegible] [illegible] – Feb (1st) 38°..48° – Cloudy with raw wind from [illegible] [illegible] – (2d) [illegible] in the night with almost a gale [illegible] [illegible] [illegible] [illegible] [illegible] board – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] at 40° [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the stocks actually [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] supplies – (2) 30°–43° – Cloudy – Some rain snow flurries – high wind towards night – Fed bees on Comb – (3) 20°– 31° Cloudy most of the day – A colony that has been fed for some time, took honey put upon their feeding Comb. A felon on the right thumb compels me to employ my wife as Amanuensis – (4) 32° – 44. Weather variable with a [illegible] of rain – Bees fed when the sun shone. Felon excessively painful, prevents me from preparing other stocks for feeding – (5th) 32° – 38° – (6th) 31° – 37° (7th) 27° – 32° (9th) 20° – 28 – Able to do nothing for my bees – fearful of great losses – (10th) 10° – 26° Wind East – Clear – (11th) 16° – 48° Wind Southerly – clear – Bees very active – fed with Ca. McFarland's assistance. (12th) 36° – 42° Raw N.W. wind – James returned – and fed the bees. (13th) 22° – 42°. Bees fed. air raw. (14th) 33° – 44° – (15th) 30° – 46°. Wind East. (16th) 7 A.M. 5° 9 A.M. 1½ 2 P.M. 5 – 6 P.M. 0 – 9 P.M. 1° Powerful wind, during the night, piercing wind through the day – A little snow fell in the night. (17th) 7 A.M. – 6°. 2 P.M. 3°. 9 P.M. – 2. Heavy wind during night (18th) 7 A.M. – 6°. 2 P.M. 10° 9 P.M. 2°. (19th) 7 A.M. 4° below – 2 P.M. 22° – 9 P.M. 18° – (20th) 7 A.M. 20°. 2 P.M. 38° – 9 P.M. 32° – Bees were fed to day – but James [illegible] (21st) 32° at 7 A.M. – 42° at 2 and 36° at 9 P.M. – (22d) 38 at 7 A.M. 55° at 2 – 40° at 9 P.M.
Beautiful day, bees very active.

(23) 36° - 62°. (24) 36° - 46. (25) 36° - 48° Very windy -
(26) 26° - 44° Clear - (94)

May 18th - [illegible]

[illegible] sealed honey - [illegible]

seemed to lay as freely as the Italian queen — her colony has
gathered a very large supply for the number of bees — have never
raised any drones that the bees have [illegible] since they [illegible]
Shall put the queen into a nucleus next week to rear queens —
(17th) At 4 P.M. on the 13th removed queen and bees for a nucleus from (No 2)
fair stock — At 9 A.M. to day found 9 queen cells — 4 of them sealed one [illegible] of
good size — bees [illegible] but I think [illegible] the [illegible] (21st) [illegible]
last week extraordinary for honey — [illegible]
[illegible] stocks have [illegible] the last [illegible]
removed an Italian queen from strong stock [illegible]
[illegible] outside — [illegible] I [illegible]
he had just set [illegible] outside [illegible]
[illegible] to nucleus on the 13th (see 17th) [illegible]
[illegible] cells [illegible]
[illegible] for my [illegible] queen at [illegible]
queen was laying quite freely — At [illegible] P.M. yesterday [illegible]
[illegible]
[illegible] the hive [illegible]
[illegible] to [illegible] the egg — which I [illegible]
last year — 21st Had a beautiful [illegible] yesterday [illegible]
[illegible]
[illegible]
[illegible] — To day [illegible] for honey — [illegible] that [illegible]
stocks [illegible] did last year — Have
removed queens from three large stocks [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

eight months old — [illegible] the great [illegible] notice, [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible]
[illegible] making [illegible] a few hours — [illegible]
12 [illegible] [illegible] — [illegible] it very difficult to [illegible] the
[illegible] [illegible] [illegible] a useless the
been to me to [illegible] [illegible] — [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] power to make good [illegible]
began to make [illegible] [illegible] [illegible]
[illegible] [illegible] — To organize [illegible] a queen
[illegible] — [illegible] hives [illegible]
last year [illegible] [illegible] queen [illegible] to the
[illegible] [illegible] [illegible] to the
[illegible] [illegible] — [illegible] [illegible] out of the
[illegible] [illegible] after [illegible] — no [illegible]
[illegible]
[illegible] — the [illegible] [illegible] [illegible] entered [illegible]
[illegible] [illegible] which I [illegible] to
[illegible] [illegible] [illegible] no longer [illegible]
(24) [illegible] [illegible] — Queens which make no
[illegible] [illegible] queen cells [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] in the hive
(25) [illegible] [illegible] — [illegible] quite [illegible]
[illegible] [illegible] to [illegible] [illegible] [illegible] — [illegible]
that [illegible] [illegible] [illegible] (27) [illegible] three
[illegible] [illegible] [illegible] [illegible] queen [illegible] each, Queens
in [illegible] [illegible] queen — [illegible] began
[illegible] [illegible] in [illegible] [illegible] [illegible] formed
[illegible] [illegible] [illegible] [illegible] [illegible] the [illegible]
[illegible] [illegible] begin [illegible] [illegible] [illegible]
[illegible] [illegible] in [illegible] [illegible]

[illegible] queen [illegible] [illegible] [illegible] — [illegible] day [illegible]
[illegible] [illegible] [illegible] — and [illegible] to [illegible] the [illegible]
are [illegible] [illegible] [illegible] in some [illegible]
[illegible] [illegible] [illegible] — I saw a queen [illegible] the [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
Weather [illegible] [illegible] day — [illegible] [illegible] as yesterday — clear [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] — (29th) Cool — [illegible] [illegible] [illegible]
in the [illegible] [illegible] (29th) [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] of queen [illegible] [illegible] the [illegible]
[illegible] [illegible] — [illegible] one with comb [illegible] [illegible]
queen — [illegible] [illegible] — [illegible] [illegible] [illegible] in the [illegible] with
[illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] bees [illegible] to [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible]
[illegible] [illegible] — [illegible] [illegible] of [illegible] comb to [illegible] [illegible]
[illegible] the [illegible] bees [illegible] [illegible] [illegible] comb [illegible] queen [illegible]
[illegible] [illegible] [illegible] comb — [illegible] [illegible] [illegible]
laid in the [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible]
to get [illegible] the exact date of [illegible] [illegible] — [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to
[illegible] (30th) [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] clear [illegible]
dried up — [illegible] in many ways the [illegible] [illegible] [illegible] —
[illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible]
[illegible] Having [illegible] many [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] — [illegible] bees
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] so windy [illegible] [illegible] [illegible] [illegible] —

A stock that threw a second swarm had 15 or more queen cells —
two had hatched and two more cut by bees [illegible] —
one comb with [illegible] [illegible] several other queen cells —
Drones in many of my stocks are yet hatching — only 3rd [illegible]
early and late for the [illegible] bees (such as the Lindens — (4th) [illegible] in boxes
[illegible] honey harvest over — two [illegible] would have made
a large [illegible] — [illegible] to [illegible] from the [illegible]
stocks — Drones (see page 28) all gone; unhatched eggs [illegible] — [illegible]
four beautiful Dzierzon queens [illegible] — two of them splendid — some
~~[illegible] [illegible] Dzierzon queens~~ — they got want of
~~[illegible]~~ [illegible] [illegible]
~~[illegible]~~ [illegible] of the [illegible] of my [illegible]
~~queens [illegible]~~
by putting them in honey board — the bees having started queen cells
before [illegible] them in the cool nights — The honey harvest [illegible]
it is best in stocks which are not crowded with honey to cage
the queen ~~[illegible]~~
[illegible] these queens were seen on return from drones between 3
and 4 o'clock of July 2nd — One had begun laying a [illegible] eggs
[illegible] [illegible] [illegible] 29 [illegible]
had been laying [illegible] [illegible] of these queens was about
a week [illegible] [illegible] the drones — [illegible] the
time of [illegible] age of queen before [illegible]
[illegible] [illegible] to [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] comb [illegible]
[illegible] — each comb best [illegible] queen [illegible]
[illegible]

taken from his stock [illegible] three days after it was [illegible] — [illegible]

[illegible] off on the ground [illegible]

Linden [illegible] nearly [illegible] the [illegible] much more [illegible]

[illegible] bees — [illegible] upon the

burning [illegible] and try to [illegible] it — [illegible]

[illegible] of the stocks [illegible] for the

[illegible]

[illegible] 9th [illegible]

Day hot [illegible]

hive in the [illegible]

[illegible] which [illegible] to a [illegible]

Most of [illegible] stocks [illegible]

[illegible]

[illegible]

[illegible] supplies [illegible]

[illegible]

[illegible]

Visit [illegible] the queen [illegible]

[illegible]

[illegible]

[illegible] combs [illegible] queen [illegible]

[illegible] removed — (8th) [illegible]

Bees [illegible] evidently only [illegible] on the linden — [illegible]

supply they would have got with rain — [illegible] many of my

stocks [illegible] need feeding — but [illegible] supply —

Began to day to feed [illegible] — this must be done liberally or they will

become entirely discouraged — Examined inside [illegible] — found

no difficulty [illegible]

[illegible]

[illegible]

[illegible] one of the greatest advantages of movable frames [illegible]

[illegible] queen [illegible]

[illegible] queen [illegible]

[illegible] queens [illegible] a great advantage to [illegible] queen [illegible]

[illegible] queen [illegible]

[illegible] queen [illegible] with [illegible] take a piece of board 1½ [illegible] thick by 2½ by 2½ or 3

[illegible] queen [illegible]

[illegible] a good [illegible]

9th Very hot & perfectly dry — Bees [illegible] upon the blossoms of [illegible] which they
[illegible] to go to seed — Quite late they worked well — [illegible]
[illegible] upon the [illegible] — dry weather [illegible] the crop — Have
now in [illegible] and full [illegible] over one hundred sealed queen cells [illegible]
[illegible] I can use to advantage — must prepare a nursery to take charge of
hatched queens a queen depository or nursery — (To prevent the destruction
of young queens from [illegible] — In [illegible] [illegible] any queen
[illegible] (these made by [illegible] 5/[illegible] strips [illegible]
the [illegible] queen [illegible] [illegible] the [illegible] — About [illegible]
it and keep it off until [illegible] — I find that the young queens
almost always go out about 8 P.M. — [illegible]
to [illegible] to the smallest [illegible] the risk of losing young queens and
[illegible] [illegible] the queen [illegible]
[illegible] — [illegible]
many [illegible] many [illegible] — [illegible]
[illegible] queen to the [illegible]
[illegible] [illegible] with [illegible]
[illegible] to [illegible] —
[illegible] the [illegible] of [illegible] [illegible] old queen [illegible]
[illegible] queen [illegible] — [illegible]
the [illegible] taken from the [illegible] — (10th [illegible]
[illegible] — [illegible]
11th [illegible]
[illegible] queen — [illegible]
[illegible] queen [illegible]
[illegible] colony to which [illegible]
[illegible]
[illegible] queen — [illegible]
[illegible] in the colony! [illegible]
[illegible] in the [illegible]
[illegible] the queen [illegible] — [illegible]
[illegible] the [illegible] queen [illegible]
[illegible]
[illegible] queen

(18) A day of misfortunes — A large colony for which I reared queen had two extra queens the smallest of which I [illegible] after removing the [illegible] queen. It seems to me [illegible] a few [illegible] — 10th Wed. [illegible]

[illegible]

queen for 104 — This stock had a pure queen wings clipped, [illegible] had been from a stock robbed up — and must have put in the impure queen with wings clipped also — see June 8th. The presence of a young queen with wings [illegible] [illegible] [illegible] all right [illegible] a [illegible] [illegible] queen became a drone layer.

Found a beautiful queen with unclipped wings — In the 9th examined a [illegible] old queen — [illegible] very fertile [illegible] young queen [illegible] queen — to day found [illegible] [illegible] nothing like a queen [illegible] [illegible] days [illegible]

[illegible]

cells [illegible] [illegible] queen [illegible] [illegible]

[illegible] [illegible] [illegible]

(14th) [illegible] no [illegible] yet [illegible] queen just hatched [illegible] cage [illegible]

[illegible] comb [illegible] [illegible] cell [illegible]

[illegible] — [illegible] to day — (15th) bright [illegible] day

[illegible] sealed queen [illegible] put in [illegible] hive to see [illegible]

[illegible] — In [illegible] queen [illegible] [illegible]

off — cell [illegible] — [illegible] I [illegible]

[illegible]!! [illegible] [illegible] hatched queen [illegible]

[illegible] in cage [illegible] — (16th) bright [illegible]

day — In one [illegible] found four drones sealed [illegible] queen — [illegible]

[illegible] of the queen [illegible] one — [illegible] queen cells — [illegible]

[illegible] of [illegible] of their [illegible] — The [illegible] just hatched [illegible] bees

to [illegible] the [illegible] great [illegible]

[illegible] the queen [illegible]

[illegible] no eggs [illegible] — The honey [illegible]

[illegible] they [illegible]

[illegible] (17th) [illegible] day — [illegible] —

[illegible] — (18th) [illegible] found [illegible] queens hatched

from queen cells [illegible] made [illegible] queen cells [illegible]

[illegible] queen [illegible] the one the queen cell [illegible] —

[illegible] the queen cells [illegible] near to [illegible]

[illegible] the first [illegible] queen to [illegible] — [illegible] the queen [illegible]

the [illegible] queen [illegible] cell [illegible]

[illegible] I have taken out the unhatched queen [illegible]! I have [illegible]

[illegible] of queen [illegible] in the cage [illegible]

[illegible] queens can be reared in this way [illegible]

[illegible] choice for [illegible] queen — I put the cage in the hive [illegible]

[illegible]

[illegible] many [illegible]

[illegible] queen [illegible]

Cage in which queen [illegible] — The cage [illegible]

[illegible]

[illegible] just hatched queen [illegible]

[illegible] honey board [illegible]

[illegible]

[illegible] queen [illegible]

[illegible] 16 days ago [illegible]

[illegible]

[illegible] a [illegible] and [illegible] as you [illegible] — I [illegible] the [illegible]
[illegible] with the [illegible] that [illegible]
[illegible] and [illegible] to the [illegible]
[illegible] of my [illegible] that I [illegible] to [illegible] to the [illegible]
[illegible] I was the first to [illegible] the good [illegible] of the
[illegible] and [illegible] (21st) Cold — Strong East wind — [illegible]
can [illegible] the [illegible] — [illegible] very strong [illegible] in 16 [illegible] — queen of 1862 — so [illegible]
[illegible] to cut [illegible] of [illegible] — [illegible] all quiet — The
[illegible] queen [illegible] — may not judge [illegible] of the age of
a queen [illegible] — Put a [illegible]
in [illegible] — [illegible] a few [illegible] — if the queen [illegible]
[illegible] yesterday [illegible] to day a [illegible]
[illegible] — [illegible]
[illegible] (a [illegible] comb) [illegible] which I saw [illegible] —
[illegible] a number of beautiful [illegible] queen [illegible] — [illegible] watch with the greatest
interest [illegible] of the [illegible] the queen
[illegible] in a large [illegible]
eggs [illegible] — (23rd) 16° [illegible] — [illegible]
[illegible] question [illegible] interest [illegible]
[illegible] queen [illegible]
[illegible] at [illegible] often [illegible]
[illegible] queens — Some [illegible] do not appear to be [illegible]
[illegible] rid of nearly all my old queens of 1862 — [illegible] queen [illegible]
[illegible]
[illegible] queen [illegible]
[illegible]
[illegible] to get [illegible] cells from [illegible]
— 8th 10h 80 [illegible] — bees [illegible] — [illegible] the queen from [illegible]
[illegible]
[illegible] on the [illegible] — The [illegible] eggs [illegible] queen [illegible]
[illegible] queen [illegible] eggs — [illegible]
[illegible] by [illegible] — [illegible]
[illegible] queen [illegible]
[illegible]
[illegible] quantity [illegible]
[illegible] — [illegible] queen [illegible]
[illegible]
[illegible] queen [illegible]
[illegible]

Some of my half hives [illegible] [illegible] [illegible] the [illegible] [illegible]

[illegible] [illegible] on the 19th [illegible] [illegible] queens [illegible] the best way to

keep young queens [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] 9th day [illegible] [illegible] [illegible]

[illegible] [illegible] — Something new! [illegible]

[illegible] beyond the [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] carefully [illegible] [illegible]

on one [illegible] the [illegible] [illegible] the queen [illegible] [illegible]

dead [illegible] if she is alive the bees [illegible] [illegible] of [illegible]

[illegible] if she is dead they [illegible] [illegible] [illegible]

the opening — [illegible] [illegible] test queens! [illegible] a queen [illegible] [illegible]

lay quite [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] upon [illegible]

[illegible] [illegible] [illegible] [illegible] carefully — [illegible]

queen may be [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] of the [illegible] [illegible]

[illegible] [illegible] [illegible] after she began to lay — 26th [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] a queen [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] queens [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] queen [illegible]

[illegible] [illegible] [illegible] the bees [illegible] [illegible]

[illegible] [illegible] the queen [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] any other [illegible] to [illegible] to make [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible]

[illegible] [illegible] [illegible] [illegible] delight to have something [illegible]

[illegible] [illegible] [illegible] [illegible] might be [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] (27th) [illegible] [illegible] queen [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] on the 8th! must have been nearly [illegible] days at [illegible]

~~(By young [illegible] colony [illegible] for 5 days [illegible] this [illegible]~~

~~Aug 11 1st 1854 / In Spring of 1860 [illegible] daily [illegible] bee from a [illegible] [illegible] year old [illegible] from a colony of the [illegible] [illegible] of the young colony — I noticed that young bees [illegible] [illegible] [illegible] days [illegible] — 2nd that they are [illegible] smaller than they [illegible] — 3rd that [illegible] the perfect development of a [illegible] to [illegible] [illegible] for laying an eggs. 4th — The [illegible] days ago [illegible] [illegible] [illegible] [illegible] [illegible] 8th [illegible] [illegible] [illegible] of a queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] after [illegible] [illegible] [illegible] queen [illegible] almost [illegible] by the bees — ([illegible]) [illegible] the impregnated queen [illegible] [illegible] [illegible] [illegible] 5 days [illegible] of queen cells [illegible] [illegible] the queen — Found 40 (forty) [illegible] [illegible] in one cell!! [illegible] [illegible] queen [illegible] [illegible] [illegible] 8th [illegible] [illegible] [illegible] laying or [illegible] queen [illegible] [illegible] [illegible] a queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible]~~

[illegible]

I am increasingly of opinion that [illegible] difference from the [illegible]

[illegible]

(4th) day [illegible]

(5th) day [illegible]

[illegible] (6th) day [illegible]

[illegible]

[illegible] P.M. [illegible] my stocks with [illegible] queens

I found [illegible] cells apparently [illegible] ready to [illegible] and as the queen

[illegible] very [illegible] in her third year [illegible]

[illegible] the [illegible] — On opening the comb I found [illegible]

[illegible] at the [illegible]

[illegible] which the [illegible] had [illegible]

[illegible] this [illegible]

[illegible] queen [illegible] to [illegible]

queen [illegible] the [illegible] the [illegible]

[illegible] of the queen — [illegible] do not [illegible]

[illegible] queen [illegible] is [illegible] by the [illegible]

[illegible] by a queen of the [illegible] of [illegible]

P.M. [illegible]

queen [illegible] the 14th [illegible]

the [illegible] queens — On the 22nd [illegible] the [illegible]

queen cells [illegible] to find so few for a large stock [illegible]

that the [illegible] had not [illegible] the cells [illegible] the [illegible]

or [illegible] of the queen [illegible] the [illegible] to [illegible]

I [illegible] to find [illegible] queen cells one from which a queen [illegible]

[illegible]

[illegible] the [illegible] comb [illegible] the [illegible]

[illegible] I [illegible] the comb and [illegible]

[illegible] queens but [illegible] two [illegible] from her on the [illegible]

[illegible]

[illegible]

[illegible] the old queen — In this case [illegible]

[illegible] sufficiently [illegible] of the [illegible] — I [illegible]

[illegible] queen [illegible]

[illegible] queen [illegible]

[illegible] in the [illegible] queen cells and [illegible]

[illegible] for [illegible] is a perfect success

[illegible] for [illegible]

[illegible]

[illegible] to [illegible] the [illegible]

a queen [illegible]

(23rd) Hot day [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] a [illegible] [illegible] [illegible] to day [illegible] [illegible] [illegible] queen [illegible] [illegible]
[illegible] of opinion that swarming colonies [illegible] [illegible] queens [illegible] [illegible] [illegible] [illegible]
queens than can be raised artificially even in the best stocks [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] some [illegible] queens from swarming [illegible] [illegible] queens
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible]
laid in egg! [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] been [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the
one of my [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] in the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — Wrote to [illegible]
July 8th [illegible] [illegible] [illegible] [illegible] — 11th [illegible] the [illegible] [illegible] [illegible] queen [illegible] [illegible]
[illegible] 20th [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] queens 20th [illegible] [illegible] queens [illegible]
[illegible] [illegible] — 21st — [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible]
26th — [illegible] [illegible] queen cells [illegible] — 28th [illegible] two queen cells [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
the [illegible] [illegible] [illegible] [illegible] [illegible] queen cells — Sending queens by
[illegible] — The [illegible] [illegible] July 8th [illegible] [illegible] [illegible] in the [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
with a [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] the size of the [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] in the [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] — the sponge [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — (29th)
90 [illegible] [illegible] [illegible] day — [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] for queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible]

30th [illegible]

[illegible] How to select and prune [illegible]

[illegible] a variety of [illegible]

[illegible] mark [illegible]

[illegible] the handsomest [illegible]

[illegible] with the [illegible]

[illegible] nearly every day [illegible]

[illegible] of my day [illegible]

[illegible] am right in my opinion — [illegible] every effort of [illegible]

[illegible] mistake of [illegible]

[illegible] I am to get the [illegible]

[illegible]

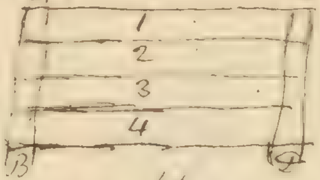
Guide Frames, Patterns, see 203

Feb. 14th 1860 }
Guide for combs— }

The guide frames described in vol. 2 — did not answer well — it seemed to discourage the bees — were too thick — and did not allow them to keep up their heat — I propose now a new plan. G

Brad on to front and rear of hive pieces 9½ 3/8 X 1/8 — (Abandoned as not so good as Rev. Levi Wheaton's plan —)

Feb. 18th 1861 —
Improved Wheaton Guide Frame }



1, 2, 3, 4 = 1/8" thick nailed between uprights at A, B, C, D — (two at each end —) these uprights are 1/4" X 1/2" wide. 4 comes only to 3/8" of bottom of the uprights. 3/8" nails used. the frame to rest or stand on the bottom-board and not to have shoulders to rest on rabbets as Mr Wheaton's — If bottoms are cut slanting (like line a b) these frames can not interfere with hitting of comb frames. To make all work right — Comb-frames 7/8" on top, ends and bottom.

9 Comb Frames 7,875 — This leaves about enough play — To the bottom of
9 Guide Frames 5,625
13,500

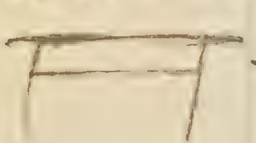
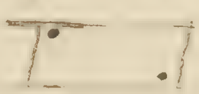
hive — at one end on bottom-board 1" from front and rear — nail two brads or nails to project up 3/4" — On ~~[illegible]~~ sides of hive above rabbets nail two brads to project from side of hive 1/4" — Put in first comb frame lower nails keep bottom at right distance from end of hive — & the ones keep top — then put in guide frame then another comb frame & then all in — you may see where to put nails on other end of B. B. to keep them all braced together — remove a few to put in nails — but the last Guide frame may be wedged — (March 3rd) The brads on uprights of comb frame should be on alternate sides

and so that brad shows in front when frame there then the frames may be changed end for end without any interference. In the same way uprights of guide frame should be one 5" the other 9¼" — the long uprights to have no further brads — there can be no possibility of interference with brads of comb frames. 2, 3, 4 should be 17⅜ X 1¾ X 1/4 — 1 should be 17⅜ X 2⅓ X 1/8 so as to project 3/8" above the uprights and be on a level with top of comb frames — this are to interfere much with bees extending their combs while hidden where bees —

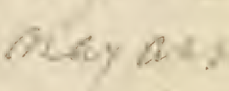
By using a little cotton or newspaper no wedging will be needed — no nails in bottom-board — and rabbets of hive will ~~[illegible]~~ [illegible] [illegible].

(over)

Happiness, love of – propriety of acting with reference to this principle, vindicated by Howe. (Blessed. of righteous. Chap. XVII)

This style of guide-frame will give the bees 4 times as much more than space for intercommunicating between their combs and the bars being only 1/8" and the ends closed – (and not open as in those of last year) the bees can easily get up and keep up the heat for comb-building – I should prefer to give them a central sheet of comb and draw it down to [illegible] comb for guides and to have no triangular piece and no wiring – Frames thus  – To remove – have [illegible] – ~~[illegible]~~ to move – Heavy board about 4 inches at one end – then in smoke until bees leave the guide and first frame (these fastened together so as to come out together) – to [illegible] have – have only two nails or [illegible] on Bottom board –  in closed position about 3/8" from first and rear end 3/8" [illegible] sides – and about 3/16" high no heads – then with the [illegible] on ends of comb frames [illegible] [illegible] of frames below to hold bees – and will keep frames apart below 3/8 more or less – rarely [illegible] being between frames on the [illegible]!

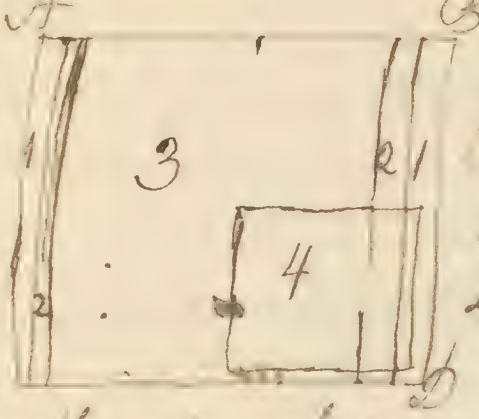
(May 8th 1861) Instead of what is below – [illegible] [illegible] for [illegible] on the sides –

(Feb. 14th 1862) Guide Frames – These frames might be tried as follows – Use only three guides and two comb frames – put two comb frames on each end – then a guide – then on each side three comb frames and guide between – In this way [illegible] of honey and the three guides came one frame of eight combs to the hive – This would not interfere much with bees – and may answer in practical ends – The two frames which do not come against any guide might have comb in them – The comb frames slightly padded – Friction against guide would be [illegible] – and sharing [illegible] with tin,  – Such an arrangement would certainly secure one comb on each frame and [illegible] expense and perfectly obviate tendency of bees to abandon the [illegible]

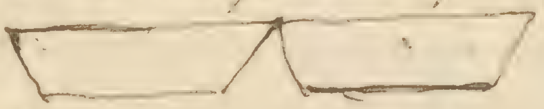
(Feb 17. 1862) Find by trial that ten frames can be used with 3 guides and yet fill up the hive – The two combs which do not come in contact with guides are here with top arrow – leave 1/8" space on the two sides – (March 1. 1862) [illegible] fasten with strings each guide to the frames so as to keep the guides in place

(June 1862) I find that when strings are used for a while perhaps there is much more tendency with the bees to cut their comb between the guides— this is obviated by using on each side of the strings a small piece of guide comb— strings have a great tendency to keep the comb straight and with proper inspection one central guide might answer all practical purposes—

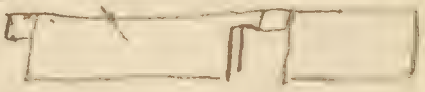
(Apl 2. 1868)
New Style of Hive
See He—



ABCD is a box— (1,1) are solid frames or dividers— (2,2) spaces between them are a set of frames filling up 3 with close fitting tops ~~like those of [illegible]~~ 4— one of four boxes with opening in bottom to let up bees from (2,2)— To work the hive remove divider on either side— which gives room to slide the frames apart— then the frames are [illegible] [illegible] helped— I do not propose this hive as a general one— but to get one made so as to prevent others from using— or patenting— might accept it as a safe guard— a much better hive than Debeauvoys— (16th) that dividers be 5/8 thick and held 3/8" from ends— this will give ample room when they are removed to work the frames— that tops of frames be 3/8" thick or even 1/2"— having sides cut on a bevel to reduce as much as possible the danger of pinching bees— when using them smoke a piece of [illegible] smoke to keep bees down while they are closed up— When the edges of the frames come together they may be [illegible] out or beveled to prevent crushing bees thus—



or—



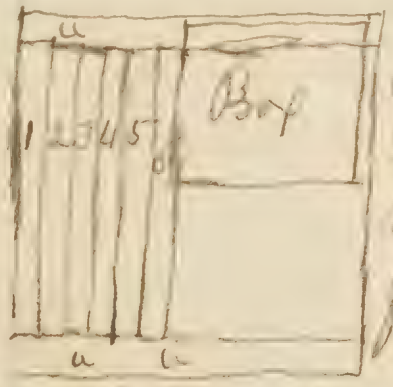
but this might lead to some cementing— Sides might be 1 1/16" wide so as to leave only 1/2 inch between them— will need [illegible] near bottom— as in present style— openings into boxes about 3/8"— the same [illegible] [illegible] [illegible] removed— frames [illegible] [illegible] to let up moisture but [illegible] let up bees— [illegible] [illegible] — not much chance to cement frames to [illegible] — [illegible] wide [illegible] [illegible] to hurt bees— or [illegible] might be so small as to keep sides of frames from getting too close to sides of case— only about 1/8 play to be needed as bees are not to get at them— nice in all these respects like present hive— [illegible] wood [illegible] might be used—

Heaven, admission to wld not promote the happ.s of the impen.t nor tend to their conversion
Page 10..14 — Philip. Manly Piety in its Spirit

Hiving — If bees light on 1 body of a tree &c a little smoke will cause them to ascend upon a bunch of green twigs with green leaves — The basket hive may often be elevated under them — and gently moved so that they will fall into it — A ~~small~~ basket put up sideways on a pole ten or twelve paces from 1 apiary and rubbed with balm will it is said entice the swarms to enter it — A writer in the Cultivator says that when they attempt to leave they may be stopped by sending 1 image from a piece of looking glass directly among them — A piece of comb in 1 hive especially brood comb with eggs and young will be sure to prevent them from leaving 1 hive —

April 18th 1863

New hive

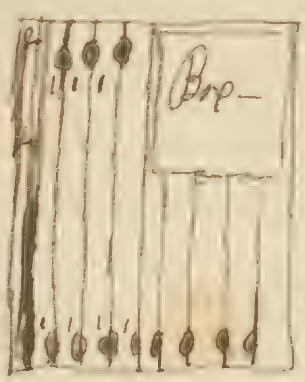


Let 1 be a divider of the [illegible] not [illegible] — 2, 3, 4, 5, 6, &c be frames with close fitting tops and made to slide from the hive — [illegible] [illegible] far enough to [illegible] side from being [illegible] coming up to the level of front and rear sides of hive — Boxes set on the tops of frames with [illegible] over u u' [illegible] openings covered with straw when boxes not in use — Claim concept of close fitting tops with [illegible] for getting surplus honey —

[illegible] box — front [illegible] close [illegible] —

April [illegible] 1863

New hive —



— Tops close fitting — 1, 11, holes cut in frames — about one inch long — 1/4" wide — so as to [illegible] 2" bee-passage — one [illegible] back of frames (3/8) one space between sides of frames 1/2" — then heat can [illegible] from the [illegible] [illegible] frames through combs — queen not [illegible] to enter boxes — Tops of frames [illegible] of white-wood or of cut [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — Tops of frames about 1 3/8 wide — holes cut thus ⌒ — holes in [illegible] [illegible] [illegible] of [illegible] At divider 7/8" with 1/2" opening behind — when wedged frames cannot be moved — as they cannot come from [illegible] [illegible] — To [illegible] take out divider & set it close to end — opened frames just enough to let [illegible] [illegible] over them — can be removed readily as they are not connected — To [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] removed from tops of frames — [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] —

will admit bees, [illegible] not [illegible], [illegible] [illegible] almost to

May 1858 — Hive keep it back ventilator so that they will not stop in patches and can enter much more readily!

Hiving — swarms — Let the new hives be in readiness — when a swarm has issued and the bees have clustered wh. they will do without any tanging or noises of any kind — place the hive perfectly clean in the shade upon a sheet ~~and raised~~ in such a manner that the bees can readily enter it — Have an open basket fixed upon a pole — elevate directly under the cluster of bees. Let the limb be jarred so that the mass of the bees will fall gently into the basket — Lower the basket and empty them out directly before the entrance of the hive — If the Queen is with them they will soon ascend — ~~If they fl~~ and those still on the tree will join them — If they fly back to the tree — the Queen is still there — and the process must be repeated — although this will be rarely necessary — As soon as the bees have ascended carry the hive to the place where it is to stand for the season — This may be delayed until evening or very early next morning — but not without some risque — for if the bees have sent out scouts to seek a new place and these return and find the bees near where they lit — they will often entice them to ~~leave~~ desert the hive — I am convinced that this is often the cause of bees leaving — If the bees cluster low down no pole will be needed — If the limb is too high to be shaken a rope with a stick at one end may be thrown over it — and it may be shaken by jerking the rope — This method of hiving will be found much better in all ordinary cases than any other — It avoids all necessity of climbing — using ladders — sawing limbs often to the injury of valuable trees — ~~Low~~ Pine bushes about six feet high may be stuck into the ground about a rod in front of the hives — the bees will generally light upon them and thus much trouble will be saved in hiving them — If the bees cluster upon the trunk of a tree they must be gently brushed off into the basket with a wing or something which will not injure them — Bees before swarming fill themselves with honey and are almost always very peaceable* Indeed it may ~~be~~ be assumed as a law in bee science that a bee with a full stomach is never disposed to act on the offensive

*Those which are cross at such times are some poor unfortunates who have sallied forth on an empty stomach — The beginner may if he is very timid use a bee-dress — but I do not recommend it — It destroys much of the pleasure in the management of bees — and is always more or less in the way —

to raking honey good — bees can only come down below — gaining aid of [illegible] chamber filled with comb [illegible] to save the great trouble with [illegible] — Let [illegible] frames with comb [illegible] [illegible] honey [illegible] must be [illegible] [illegible] See 90

Hive - Certain things requisite in every properly constructed Hive - Axioms =

1. All necessary operations ought to be easily performed without injury to a single bee.
2. Not a single unnecessary step ought to be required of a single bee
3. The greatest possible protection ought to be afforded against extremes of heat or cold - and this consistently with securing the heat of the sun in Spring - to promote early breeding and early swarming. — [illegible] -
4. Perfect control of ventilation without admitting too much light, or endangering attacks from robber bees - or moths. ~~[illegible]~~ ~~[illegible]~~ -
5. Facilities for cleansing during cool weather.
6. Compactness - so as to require the least possible quantity of material in construction. — Lightness -
7. The air, heat, odor of the hive should pass in the freest possible manner to every part of the hive, boxes, glasses occupied by the bees.
8. No part of the hive should ever be below the place for exit - no dragging of the dead & refuse up-hill -
9. No cracks - crevices &c for the moth - or [illegible] -
10. Facilities for closing at any time without injury to the Bees. regulating entrance -
11. Equally well adapted to be used as a swarmer or a non-swarmer -
12. Of such a form as to admit of all operations by a single person
13. Facilities for changing comb when too old.
14. Size adapted to the instincts of the Bee.

Journal Continued from [illegible] — August 6th 1864 —

8 P.M. — At 5 P.M. — the heavens grew dark — "the God of Glory thundered" and at 6½ P.M. the rain began to fall — [illegible] have been already done [illegible] great and [illegible] from [illegible] queens [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] almost well — much better than [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] with [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

9th Aug. Wt — Beautiful [illegible] [illegible] [illegible] [illegible] queens [illegible] [illegible] [illegible] [illegible] [illegible] the queen cells began [illegible] [illegible] cells [illegible] [illegible] Bee [illegible] [illegible] [illegible] [illegible] [illegible] large [illegible] [illegible] [illegible] Am now caging just hatched queens and keeping them [illegible] [illegible] [illegible] queen cells [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

were not sure to be drones — may tone down in this way — All of the colonies which I beg to feed in Winter, retain their drones! One great trouble in rearing Italian Queens is the [illegible] of [illegible] — Find the larger part of queen cells put in [illegible] appear when the stock has plenty of material below — glutted (see [illegible]) [illegible] the manner that allows frames to slip in that opening — No 62 — with queen laying [illegible] a week, has a few drone eggs in drone cells on the lower corner of comb — Gave a frame having drone half worker comb — on the 5th found both drone and worker cells [illegible] eggs — To day found drone cells on edges and corners supplied — [illegible] had three eggs in it — This queen has a [illegible] for laying drone eggs — [illegible] generally supplied also — Gave [illegible] drone comb — [illegible] — A colony with a number of very large and beautiful queen cells [illegible] drone queen cells, [illegible] as most instances [illegible] of these drone queen cells [illegible] when changed to another place do seem to stay put, remarkably [illegible] — (9th) Hot day heavy thunder around us — Many beautiful queens hatching in my nursery hive — Last night bees flew [illegible] to the lamp — Have stopped my [illegible] — very unfertile queen has been [illegible] at last — at last bees left the two last fertile ones to alone — For my nursery hive I got them to attend queens to unfertile queens — [illegible] queens [illegible] in this way — one left to [illegible] successfully [illegible] when queens are plenty — If we wish to find out whether a stock [illegible] a queen put in a queen not [illegible] — let [illegible] queen cells [illegible] — Take a young queen just old enough to be [illegible] — put [illegible] for the comb having (41) Only one queen [illegible] — [illegible] great number [illegible] — Colonies having drone comb [illegible] eggs [illegible] — [illegible] young queens are laying drone eggs! I have now [illegible] to my own complete satisfaction how to keep and get the [illegible] drones. To attempt [illegible] queen rearing [illegible] queens [illegible] for any [illegible]

(10th) 94° — Hot day — [illegible] splendid queens [illegible] young queens [illegible] I am cramming in a large stock [illegible] May [illegible] [illegible] by natives —

No (47) — (See July 27th) has plenty of brood and eggs — [illegible] the [illegible] queen — [illegible] young queen — do not think she is fertile — [illegible] queen [illegible] drone comb [illegible] old queen [illegible] colony has [illegible] to lay [illegible] drone eggs — In a comb [illegible]

[illegible] cells [illegible] from the [illegible] found three

eggs [illegible] queen [illegible] caged

[illegible] queen [illegible] queen cells [illegible]

[illegible] I [illegible] cells [illegible]

[illegible] queen cells [illegible]

[illegible] queen [illegible] queen [illegible]

[illegible] days [illegible]

[illegible]

I find contracted drone queen cells — Before any insects hatches the case opened at the mouth — has as any wide opening — does the drone larva in [illegible] to [illegible] often any cocoon like a queen? I find not the slightest difficulty in [illegible] the queen [illegible] by [illegible] [illegible] of the [illegible] — When it is difficult to find a queen in a hive [illegible] down before a [illegible] queen [illegible] [illegible] old black [illegible] may as possible to fly to old black — [illegible] [illegible] of [illegible] [illegible] a [illegible] queen [illegible] — [illegible] instances [illegible] a queen [illegible] cell [illegible] opened out the [illegible] [illegible] by bees and [illegible] [illegible] [illegible] bees — [illegible] any [illegible] in [illegible] of queen [illegible]

(12th) 78° 99° — Drones in sight — a few [illegible] only here — [illegible] [illegible] of [illegible] about the hive — [illegible] [illegible] that when they find [illegible] [illegible] to [illegible] [illegible] get [illegible] — [illegible] of the queen [illegible] [illegible] queen [illegible] — [illegible] young queen — [illegible] days [illegible] [illegible] then [illegible] — [illegible] queen [illegible] [illegible] [illegible] young queen [illegible] [illegible] queen [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] the queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] young queen [illegible] (14th) [illegible] [illegible] black [illegible] (15th) 99° [illegible] queen [illegible] [illegible] [illegible] [illegible] — Plenty of young queens [illegible] place [illegible] for them! [illegible] young [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] young queen [illegible] (16th) [illegible] [illegible] [illegible] queen [illegible] [illegible]

[illegible] — [illegible]

[illegible]

[illegible] to [illegible] great [illegible] consumption of honey by [illegible] — [illegible] in the [illegible]

[illegible] queen [illegible] year [illegible] from the hive [illegible] —

[illegible] may be [illegible] — [illegible] cells [illegible]

[illegible]

[illegible]

[illegible] queen [illegible]

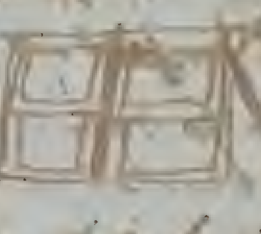
[illegible]

[illegible]

[illegible]

[illegible] — [illegible]

[illegible] — [illegible] plan for [illegible] queen [illegible]



[illegible] —

[illegible] — [illegible] 76° [illegible] —

[illegible]

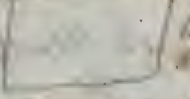
[illegible]

[illegible] queen [illegible] cells [illegible]

[illegible]

around the frame will hold the cages in place and let them be easily removed [illegible] thus—

— Young queens seldom accessible very [illegible] the Cashey [illegible] bees — [illegible] they [illegible] — they must therefore be able to feed themselves — [illegible] to it [illegible] easy to the [illegible] — but if where they [illegible] they [illegible] get it — the plan is [illegible] [illegible] Since [illegible] so much attention [illegible] to [illegible] few days [illegible] cage [illegible] by bees [illegible] [illegible] in the [illegible] along — [illegible] the queen cages [illegible] in the [illegible] flat [illegible] between [illegible] [illegible] in them [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] (19th/60) — At [illegible] [illegible] [illegible] [illegible] the last two days [illegible] [illegible] [illegible] [illegible] the last cage [illegible] [illegible] allow the queen to [illegible] [illegible] — [illegible]



[illegible] in cage [illegible] [illegible] [illegible] [illegible] [illegible] (20th) [illegible] [illegible] (21st) [illegible] [illegible] queen [illegible] (23rd/60) [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible]

[illegible] eggs

they were [illegible] and [illegible]

[illegible] paper in [illegible]

[illegible] — [illegible] that [illegible]

[illegible] before [illegible] a [illegible] of the [illegible]

[illegible] from these [illegible] from which I can [illegible]

two [illegible] laying [illegible] laying [illegible]

[illegible] one year [illegible] laying [illegible]

[illegible] not quite [illegible] eggs in the [illegible]

[illegible] from Mr [illegible] Robinson of [illegible]

[illegible] may be [illegible]

[illegible] the question whether [illegible]

[illegible]

(2)

Found another queen just [illegible] on these combs — There was a good opportunity of testing [illegible] of drones from these four [illegible] — In these [illegible] cells, where a fertile worker has laid around in a circle of cells — [illegible] these larvae in each where some eggs [illegible] the [illegible] by the bees! These queen [illegible] of very [illegible] — (27th) 56°. 72° — Windy — with clouds — rather cold — A colony [illegible] has not been [illegible] getting rid of its drones — [illegible] feel a little [illegible] generally [illegible] in the [illegible] — get queens very easily by [illegible] into [illegible] — a very good way with [illegible] — If a colony [illegible] queen [illegible] of brood ready [illegible] cannot be [illegible] the queen to be fertile [illegible] when they hatch — little [illegible] of bees and no more drones than [illegible] had [illegible]! [illegible] to be a fertile worker [illegible] — [illegible] [illegible] queen cells [illegible] — [illegible] [illegible] fertile [illegible] — [illegible] queen [illegible] — fertile worker [illegible] queens [illegible] — [illegible] queen [illegible] — [illegible] — Tried a colony [illegible] queen [illegible] another — they [illegible] — Found a queen cell with [illegible] jelly [illegible] queen — [illegible] [illegible] — [illegible] queen cells [illegible] — [illegible] queen [illegible] — 28th 5[illegible]. [illegible]° — [illegible]

[illegible] queen [illegible] — [illegible] — [illegible] a fertile queen [illegible] queen [illegible] — Better plan to [illegible] — [illegible] queen in the [illegible] — [illegible] fertile [illegible] — (30th) 56°. 68° — [illegible] too cold for [illegible] — [illegible] queen [illegible] [illegible]

[illegible] — (31st) 44°. 91° — Many bees of [illegible] — [illegible] — [illegible] [illegible]
[illegible] queen [illegible] of the one so found yesterday — [illegible] [illegible] beautiful
[illegible] [illegible] there are [illegible] — as I have called the [illegible] queen
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] queen [illegible] (49) queen of [illegible] — [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] in the [illegible]
queen [illegible] [illegible] this is the 7th [illegible] of the [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] I don't [illegible]
may be very [illegible]
queen [illegible] the egg — [illegible] queen [illegible] — September (1st) — 46°. 74° —
[illegible] [illegible] [illegible] — [illegible] queen [illegible] [illegible]
[illegible] [illegible] [illegible] near [illegible]
[illegible] A queen with [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible]
[illegible] [illegible] — When queen [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] queen at mouth of the [illegible] [illegible] [illegible]
[illegible] queen [illegible] [illegible] [illegible] [illegible] queen [illegible]
[illegible] — [illegible] queen [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] queen
the [illegible] the queen [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] queen [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
queen [illegible] [illegible] [illegible] [illegible]
[illegible] the queen [illegible] [illegible] [illegible]
queen [illegible] queen [illegible] — (2nd) 56°. 80° — [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] in 12 [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] queen [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible]

[illegible] with [illegible] so much [illegible] that it would be best to [illegible] [illegible] of hiving
[illegible] getting a great many ill-mated queens — the golden time [illegible]
of [illegible] [illegible] has [illegible] of [illegible] [illegible] and before the appearance of the [illegible]
eggs [illegible] — (5th) [illegible] 80° — Warm night — Bees began [illegible] to [illegible] [illegible] to
[illegible] the hive [illegible] a most surprising [illegible] about 9 [illegible] — a [illegible] [illegible]
only [illegible] — they [illegible] [illegible]
[illegible] — warm [illegible] — In the [illegible] — [illegible] at 4 [illegible]
they [illegible] very [illegible] yesterday — [illegible] Mr [illegible] 1½ to 2 miles off [illegible]
[illegible]
Mr [illegible] thinks it might have [illegible] — Mr [illegible]
[illegible] used for queen raising eggs from a [illegible] queen! [illegible]
of the [illegible] of the queen [illegible] by [illegible]! (4th) Began to [illegible]
[illegible] at 9 P.M. yesterday — At 8 [illegible] today 1½" [illegible] had fallen! [illegible]
[illegible] — Bees got but little — (5th) Began to rain [illegible]
about 10 P.M. — [illegible] night — 2½ inches [illegible] in this [illegible]! 6 inches in a [illegible]
over 3 days! [illegible] today [illegible] — Bees get very little — [illegible]
of queen cells are [illegible] to hatch — [illegible] cells [illegible] of [illegible]
[illegible] by [illegible] — 6th — Cool — cloudy — [illegible]
[illegible] queen cells [illegible] — [illegible] queen has already begun to lay — she appears [illegible]
[illegible] — but [illegible] like an unfertile queen — many of her eggs are laid on the sides of
the cells half way down, [illegible] in her [illegible]; Bees for the last few days do [illegible]
nothing — [illegible] queen [illegible] today [illegible]
queen [illegible] — [illegible] queen cells — [illegible]
[illegible] — 7th Cloudy and [illegible] of the day, [illegible]
[illegible] — [illegible] by a [illegible] — [illegible]
[illegible] — [illegible] queen [illegible]
unfertile queen [illegible] to them — [illegible] a queen [illegible]
[illegible] (8th) Beautiful day — a little rain last night
[illegible] — [illegible] to (13) a [illegible] queen ([illegible]
[illegible]) August 12th — 80° Queen laying [illegible] — [illegible] 9th — [illegible]
in [illegible] cells — [illegible] beginning to hatch — among them a few [illegible] — [illegible]
few [illegible] — [illegible] — of [illegible] good — Is the queen [illegible]
[illegible] for impregnating eggs? (9th) 84° 80 — [illegible]
Beautiful day — bees [illegible] — [illegible] queen [illegible]
[illegible] — [illegible] queen just hatched [illegible]
[illegible] each [illegible] — [illegible] queen [illegible] (10th) 68°, 80° —
[illegible] — Splendid weather — [illegible] to be [illegible] up [illegible] honey — bees
being [illegible] for the season — [illegible] splendid queen [illegible] — 12 [illegible]
[illegible] queen [illegible] — Bees in [illegible]
[illegible]
[illegible]
the 17th of August [illegible] the 10th at 8 [illegible] — [illegible] queen [illegible]

[illegible]

(N^t 56.. 70° – [illegible] – (12^h 50^m) [illegible]

[illegible] 12^h 50^m .. 66° [illegible]

[illegible] (14^h) [illegible]

[illegible]

(16th) 44° – 70° – Beautiful day – bees work well – get considerable honey – from wild aster [illegible]; [illegible] in full flight before 10 A.M. –
A number of young queens must have been [illegible] – In enlarged [illegible]
nuclei where young bees are hatching very easy to get the young bees to keep
[illegible] – A very large colony has but one queen cell [illegible]
after queen was caged – two [illegible] – a very strong one had [illegible]
[illegible] – Found a number of caged [illegible] queens [illegible]
after which the bees began to [illegible] – (17th) 46° – 72° – Very pleasant –
A nucleus [illegible] – had two caged queens [illegible] that put [illegible] –
Found a [illegible] with honey bag outside on back, full of honey – it
burst when handled! (18th) 56° – 70° – Bees worked [illegible] for a few hours – strong wind
and a [illegible] rain at 10 A.M. – bright [illegible] – wind changed [illegible] to N. W. [illegible]
to 62° [illegible] bees [illegible] – [illegible] at 9 P.M. 48° – [illegible]
(19th) 38° 52° white frost – [illegible] on the grass 32° – [illegible]
[illegible] effect [illegible] but I [illegible] very [illegible] – Bees
[illegible] – [illegible] to [illegible] –
[illegible] queen seems larger and is laying more freely – [illegible] being
[illegible] bees playing out [illegible] about the
days after [illegible] – [illegible] – [illegible] 10 A.M. – 46° – 20th 39° – 65° –
A [illegible] day – Found a dozen or more young queens in nuclei just [illegible]
[illegible] just right for queens in [illegible] queens [illegible]
[illegible] a nucleus [illegible] that young queen [illegible]
bees [illegible]
[illegible]
[illegible]
[illegible] – (21st) 47° – 76° – Bees [illegible]
[illegible] on asters, [illegible] Golden Rod – [illegible] asters [illegible]
[illegible]
[illegible]
[illegible] – Easy to [illegible] aster [illegible]
[illegible] queen [illegible] bees after [illegible]
[illegible] nuclei [illegible]
[illegible]
[illegible]
[illegible] caged queens [illegible]
[illegible]
22nd [illegible] – Splendid day for honey – [illegible] – [illegible]
on asters [illegible] – [illegible] nuclei [illegible]
had [illegible] caged [illegible] young queens [illegible]

[illegible] them Bees offered to me [illegible] [illegible] attached to old queen — My old
Italian [illegible] queen is laying [illegible] — her [illegible] [illegible]
[illegible]! Strength does it — The strong colonies are [illegible] the
honey — and every one of them in a few weeks days will be [illegible] [illegible] —
[illegible] at 10 a.m. — and [illegible]
[illegible] plenty of queen cells — [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] (seen to me) [illegible]
[illegible] Weather [illegible]
[illegible] (23rd) 60°..81° [illegible]
[illegible] magnificent [illegible]
[illegible]
[illegible] queen [illegible]
[illegible] to hatch on the 9th [illegible]
[illegible] a cloud of dark bees [illegible]
[illegible]
[illegible]
[illegible] (25th) 56°..81° — [illegible]
[illegible] (26th) 52° [illegible]
[illegible]
[illegible]
[illegible] the honey [illegible] (24th) 64°..69° — [illegible]
[illegible]
[illegible]
[illegible]
[illegible] 1 a.m. — 49° (25th) 38°..60° — White frost on [illegible]
[illegible]
[illegible] at 10 a.m. [illegible]
[illegible] at 9 a.m. to-day 48° [illegible] 60°
Transferring bees — [illegible]
[illegible] to-day [illegible]
[illegible] clean and beautiful — [illegible]
[illegible] queen cells [illegible]
[illegible]

[illegible] is not [illegible] one queen to [illegible] all [illegible] [illegible] to [illegible] queen [illegible] [illegible] generally — [illegible] [illegible] useful to [illegible] [illegible] (27th) 52° 71° [illegible] [illegible] on [illegible] but queen [illegible] to [illegible] (28th) 55 – 66° [illegible] a [illegible] queen [illegible] Some [illegible] colonies [illegible] have [illegible] [illegible] [illegible] [illegible] (29th) 52° — [illegible] queen [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] fertile queen in [illegible] 19 hours to a [illegible] [illegible] fertile queen [illegible] queen [illegible] by a fertile queen [illegible] queen [illegible] [illegible] (30th) 53 – 55 [illegible] colonies [illegible] [illegible] [illegible] — October (1st) 48°. 52 [illegible] (2nd) 53°. 57° — [illegible] (3rd) [illegible] queen [illegible] (5th) 60 – 62° [illegible] (6th) 52 . 66° [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] at [illegible] which [illegible] queen [illegible] ? Some strong colonies in [illegible] [illegible] only [illegible] very little brood — others [illegible] very little honey have considerable [illegible] — [illegible] quite [illegible] late [illegible] — a quantity of [illegible] [illegible] [illegible] [illegible] eggs to be [illegible] [illegible] [illegible] [illegible] lost [illegible] good to [illegible] of the [illegible] [illegible] would be lost [illegible] If bees are lost late in [illegible] will be getting [illegible] [illegible] important [illegible] (7th) very windy — [illegible] 34°. 44° — very [illegible] [illegible] 10 [illegible] (8th) [illegible] — 38° [illegible] [illegible] [illegible] 30°. 44° [illegible] (10th) [illegible] 61° [illegible] [illegible] (11th) 34° [illegible] 50° [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 6th [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Annexed [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] (12th) 40°. 60° — [illegible] windy [illegible] 16 days [illegible] [illegible] yesterday — 60° [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] (13th) 30°. 62° — White frost — beautiful day — [illegible] [illegible] on the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] honey before the rest — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the [illegible] [illegible] — Doubtful [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] (14th) 28° [illegible] (16th) 30°. 57° — [illegible] frost — splendid day — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

where young queens two weeks ago [illegible] [illegible] [illegible] again [illegible] [illegible]
feed for a few days to see whether the [illegible] will lay again [illegible]
tomorrow [illegible] [illegible] to see [illegible] [illegible] [illegible] for it [illegible] the [illegible]
To test queen late in the season colony should be [illegible] When bees do
not have access a queen — [illegible] large [illegible] [illegible] [illegible] so
as not to have [illegible] [illegible] in [illegible] her away! In one hive with three
stories [illegible] queen [illegible] a [illegible] no [illegible] — In one with two stories
[illegible] the [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] in the cells — (15th) 44° - 60° — Cloudy [illegible]
of the day — at noon [illegible] came out [illegible] [illegible] [illegible] — To keep a frame [illegible]
in place — drive a stout nail into its edge [illegible] [illegible] [illegible]
the [illegible] board [illegible] — To have combs [illegible] [illegible] [illegible]
the [illegible] [illegible] [illegible] [illegible] for winter — [illegible] [illegible] [illegible]
[illegible] [illegible] portion of comb [illegible] so that they do not [illegible] [illegible]
[illegible] [illegible] [illegible] to [illegible] [illegible] [illegible] — Adjustable distance
between combs important in wintering stocks, giving [illegible] [illegible] [illegible] [illegible]
[illegible] may make all the difference between the combs [illegible] [illegible] to [illegible] — [illegible]
[illegible] [illegible] a [illegible] of [illegible] for [illegible] [illegible] filled up [illegible] [illegible] or bottom [illegible]
[illegible] — [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] in handling them!! — (16th) 30° - 52° — Heavy frost — cold wind [illegible]
[illegible] day — [illegible] [illegible] [illegible] — (17th) 34° - 56° [illegible] [illegible]
day — [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] of my stocks
The [illegible] for [illegible] queen cage [illegible] it [illegible] for bees to [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] corner of a [illegible] — When bees [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] by [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] as though they belonged [illegible] [illegible]
[illegible] [illegible] they did!! [illegible] [illegible] with [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] of great importance [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] to make [illegible] [illegible] [illegible] — (18th) 35° - 50°
[illegible] frost — chilly wind — [illegible] not so [illegible] as yesterday — [illegible] queen cage to [illegible]
[illegible] queens [illegible] [illegible] — [illegible] perfectly — [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] when [illegible] [illegible] left [illegible] — [illegible] [illegible]
of a [illegible]. Young queen in cold weather not necessarily [illegible] to [illegible] queen [illegible]
so [illegible] [illegible] the eggs [illegible] [illegible] [illegible] — Breeding [illegible] [illegible] by
feeding [illegible] [illegible] it had been [illegible] [illegible] — Have not yet [illegible] any bees added to
the colonies — (19th) - 30° - 50° — Heavy frost — [illegible] [illegible] [illegible] the [illegible] place [illegible]
[illegible] [illegible] [illegible] — [illegible] — [illegible] [illegible] — Stringent [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] in the [illegible]
thirteen [illegible] [illegible] [illegible] strong [illegible] [illegible] — [illegible] [illegible]

guard about our cells — Reared a queen two days ago and gave her caged to a other [illegible] — where [illegible] [illegible] the [illegible] — her colony [illegible] [illegible] upon on a few minutes [illegible] [illegible] [illegible] [illegible] [illegible] of the [illegible] [illegible] the [illegible] board of her [illegible] house! — When there is but little [illegible] in a hive [illegible] [illegible] queen [illegible] [illegible] [illegible] the [illegible] — To day two queens hatched [illegible] the same time [illegible] [illegible] [illegible] two more [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] the [illegible] — 12 days of May [illegible] — Gave a queen just [illegible] to a good [illegible] — [illegible] for [illegible] — A few days after found [illegible] [illegible] [illegible] [illegible] — [illegible] (21st 30° [illegible] 49° — [illegible] [illegible] — Last night a [illegible] [illegible] beautiful [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] queen cells — [illegible] [illegible] [illegible] — A little [illegible] this [illegible] (25th 36° 47°) [illegible] [illegible] [illegible] — [illegible] [illegible] with snow — [illegible] raw day — Within the last few days [illegible] [illegible] [illegible] beautiful queens have hatched [illegible] beautiful and [illegible] [illegible] at any time [illegible] [illegible] — I have [illegible] a considerable number of Drones [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] weather quite a number of young queens may still [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] a number of Drones [illegible] [illegible] [illegible] (28th 36° 54°) Some splendid queens hatched — [illegible] [illegible] late queens [illegible] Drones queen [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] queen [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queens [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queens [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] very beautiful [illegible] [illegible] [illegible] [illegible] [illegible] (26th [illegible] 50°) [illegible] [illegible] [illegible] — [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] stocks — To [illegible] [illegible] stocks to [illegible] in my hive — Remove part of top cover — lay it with [illegible] of hive, [illegible] on the inside of cover [illegible] upside down — when hive [illegible] [illegible] — [illegible] it down [illegible] cover — [illegible] a [illegible] [illegible] — [illegible] to [illegible] hive —

(26th) 47°. 58° — Cloudy — some rain — [illegible] [illegible] [illegible] — (27th) 47°. 56° — [illegible] and [illegible] to [illegible] any bees — Union of stocks. If two or more stocks are to be united — first remove from the hive all the [illegible] [illegible] — [illegible] — the bees [illegible] [illegible] in the [illegible] [illegible] [illegible] [illegible] [illegible] upon the remaining [illegible] [illegible] on the [illegible] — after they have [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] that the older bees may easily be [illegible] — [illegible] [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of the [illegible] [illegible] — It may not be [illegible] to cage the queen [illegible] is going right — The [illegible] of [illegible] [illegible] a very valuable idea (28th) 50° — Cloudy, [illegible] rain — nothing done with the bees — 29th, 30th, [illegible]

28th — 31st — 40. 62 — Rain — bees fly some — [illegible] out — Nov. 1st 30°. 54° — [illegible] [illegible] [illegible] — wind to rain from East — [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] at home to day — Some queens in [illegible] are laying [illegible] — Bees ought now to be put in winter quarters — 2nd 38°, [illegible] [illegible] [illegible] [illegible] 40° [illegible] rain last night — rain — [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] (4th) 27°. 44° — [illegible] fair — queen has [illegible] the last few days — as beautiful as [illegible] [illegible] — [illegible] to feel [illegible] [illegible] the [illegible] of my [illegible] so many [illegible] queens [illegible] a few years ago — Heard yesterday that my [illegible] bees [illegible] [illegible] [illegible] 6th 36°. 50° — Cloudy — [illegible] — 7th 30°. 50° — [illegible] [illegible] to unite [illegible] — Make [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] time of breaking up a stock [illegible] [illegible] around the old spot — where they go to the [illegible] — [illegible] the bees [illegible] [illegible] stock [illegible] make room for [illegible] they stand — [illegible] [illegible] to [illegible] [illegible] queens — [illegible] [illegible] [illegible] to be [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] 65° — [illegible] part of day — [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] the old [illegible] [illegible] — Heard near the [illegible] with a [illegible] [illegible] [illegible] union of stocks — [illegible] [illegible] [illegible] — Moving

breaking up stocks [illegible] bees [illegible] [illegible] [illegible] more to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] — Uniting two queens [illegible] [illegible] [illegible] to [illegible] [illegible] the great difficulty in getting queens [illegible] [illegible] [illegible] the difficulty of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — 9th 60° — [illegible] [illegible] [illegible] [illegible] [illegible] to day [illegible] [illegible]

in the highest or all times to give winter — (10th) 37°. 43° — Wind changed
to N.E. & [illegible] strong — cold day — hope for Indian summer yet — (11th) Rain —
(12th) day rain — (13th) 24°. 38° — Bright but cold — (14th) 25° 42 — Any imported Italian
queen arrived in New York on March 2nd was forwarded to reach us the 9th — Received here
on the 12th — and given to a stock prepared for her on the 13th — The only queen — some
of the [illegible] being [illegible] — Am satisfied that it is difficult to have the queens
leave Europe in October — To give queens in cold weather — Having noticed that
bees incline [illegible] greatly to come up under comb when laid on frames — lay a piece
over the frames and queen cage placed between two frames and the bees were to be done
not to leave the queen cage in cold nights — This may be of great practical
importance — Found imported Italian queen queen yesterday laying finely to day —
[illegible] being fairly cold early in [illegible] found cluster of bees dead on outside comb —
I am satisfied that winter passages ought not to be dispensed with and that cleats, straw
or old working quilt should be put over the frames at [illegible] as frosty nights come —
[illegible] on top of the comb laid on frames cluster of dead bees. The weather for
the last few days being so cold that when they got chilled their [illegible] cold night go
they could not move up — (16th) 29. 42° — Rain — can do nothing to uniting stocks — this
being put off too long in waiting upon October queens — Hereafter place no dependence
upon queens late in September — 16th — 35 — 40 — Snow — cloudy (17th) 46°. 56° — Raining —
was able to unite some stocks — In some instances where old strong stock was
not disturbed at all they treated the strange stock down before them —
Disappointed in number of young queens found these are unimpregnated — It is true
that the weather has been unusually unfavorable but still I see queens not to be relied on
(18th) 35° — Rain — (19th) 26°. 42° — Splendid day — finally well fixed
up for winter a number of stocks — (20th) Sabbath — 36°. 46° — Glorious
day — (21st) 26°. 27° — Snow flurries — awfully raw day — (22nd)
16°. 17. 13° — Snow flurries — very windy savage day for November — (23rd) 7° 26°
Broke up [illegible] upper winter cloth — In [illegible] years but two colder mornings in Cincinnati
in November — (24th) 20° 40° — Frost in upper cover quickly dried out by bees — all
dampness seems to be also dried out from cloth — very important to keep the hives in winter in the
sun — [illegible] cold may not hurt them — shall then be able to paint all my hives white, to have
any left in winter — this highly important for [illegible] — [illegible] enough to make [illegible]
bees — 26th 26°. 46° — Finished uniting stocks — Had to break up a number for
want of proper queens — Unite stocks in October — November too late to
be depended on — Stop breeding queens in September — Loss in depending upon
late queens far greater than any gain — August the most reliable month for getting
prime queens — (26th — 30° — (27th) Cloudy some rain — 36°. 50° — (28th) 52° — (29th) 60° —
(30th) 40°. 50° — Beautiful day — Dec (1) 30°. 48° — cloudy — (2nd) 52°. 57° cloudy — 3rd 47°.
34° — (4th) 26° clear — (5th) — 29°. 46° — (6th) 38°. 40° — (7th) 48°. 30°. 23°. 9 o'clock — 16° — 8th —
12°. 16°. 13°. 10 o'clock 6°. 12 o'clock — 3° —

(9th) 5°.. 20°.. Snow (10th) 19°.. 25°.. (11th) 18°.. 9 A.M. 8°.. 10 A.M. 4°.. 8 P.M. 2°. 6 P.M. 0°-
(12th) - 2°.. 12° - (13th) 14°.. ~~32~~ 29° Cloudy - Snow - (14th) 34°.. 19° Clear - (15th) 25°.. 32° - Sleety
(16th) 32° - Rainy very - slippery - 17th 35°.. 42° Clear - 18th - Cold rain -
19th - 40°.. 20° - (20th) 14°.. 29°.. (21st) 24° at 10 P.M. - Snowed all day (22d) 9°.. 14° 20°
(23d) - 10°.. 18° - Clear - (24th) Fine day (25th) Hail - sleet - (26th) Foggy - warm -
(27th) Rainy - warm (28th) Snow - (29th) 10°.. 23° ~~Snowy~~ - (30th) Snowy (31st) 10° =

July 28th – Time of queens destroying queen cells – A queen hatched at 6 A.M. – in a small nucleus with nearly a dozen queen cells – bees very gentle from being often opened – examined every half hour – at 12 M. one cell opened – 1 P.M. – found her working upon the apex of another – lifted out comb – and took into entry (hole) – she [illegible] [illegible] of another – [illegible] tried some time but could not gnaw through the [illegible] cocoon – [illegible] be on new bore – in a few minutes she opened a hole [illegible] did not once attempt to use her sting – thought I saw her bite the larva – as soon as she left – bees began to enlarge the opening – made very slow progress compared with the queen – she returned again and again to look at the cell – 29th queen thirty (30) hours old flew just for a little (cut keeps) – Important use of pins – to mark the frame that has queen cell – insert a pin so as to [illegible] – If the cell projects on one side – [illegible] so as to [illegible] in lifting out of the hive – insert the pin so as to have the head project on that side of frame! – also [illegible] [illegible] by putting [illegible] the cage [illegible] when the frames between which cage is [illegible] – 28th Queen 48 hours old can fly but not with [illegible] [illegible] [illegible] an older queen – 29th opened on side a queen cell – At 8½ A.M. liberated a caged [illegible] queen – bees clustering! – She seemed much smaller [illegible] perfect queen – (caged a week ago) – [illegible] laying about once an hour – 3½ P.M. when first caged – examined [illegible] no eggs but queen seemed larger – 4½ P.M. three eggs – 6 P.M. 10 eggs – I think that the bees feed queen in a peculiar way to stimulate her ovaries – I also cage a queen just impregnated – keep her caged four days – and see if she will lay at once when liberated – If the food given by bees stimulates – it may be that usually they do not give [illegible] queen impregnated – If they do and she does not need this – it becomes a [illegible] layer – May not food be different from honey – jelly? Forming nuclei – [illegible] brought this to much greater perfection – Early make a [illegible] [illegible] nuclei so as to keep brood – Take one or two frames of brood and honey – mostly sealed – some eggs enough to raise queens – Give if possible sealed queen cell and [illegible] [illegible] [illegible] – shake out bees – [illegible] young ones [illegible] – [illegible] water in one comb – [illegible] bees and [illegible] [illegible] [illegible] keep them [illegible] out of [illegible] – before opening them in [illegible] – Find no trouble in thus making nuclei – [illegible] get [illegible] – [illegible] usually will start before bees [illegible] – [illegible] [illegible] bees soon becomes strong enough – vacant cells given for [illegible] queen — have made over 40 in this way all perfectly successful — If you have caged queens not sealed elsewhere — can give one to each nucleus and remove to be used again next day after bees are liberated — By seeing that the nuclei are well fed and have bees enough I am not bothered with the dwindling. Of all the plans for forming nuclei like this the best! (31st) 60° — Clear — Opened side of queen cell so as to see queen inside — bees closed again! Queen not more than an hour old — bit me! Queen nearly two days old in a nucleus had destroyed all two of three queen cells — Interesting facts about a colony with a fertile worker — In May 15th removed a queen from a full stock — many queen cells constructed — removed most of them — one or more queens hatched — colony failed to get a fertile queen — became quite crowded in the honey and bee-bread — When brood had hatched there [illegible] eggs in cells some in worker, some in drone — all drone brood — colony soon became very full of drones from eggs to mature ones — Queen [illegible] June 20th) an unfertile young queen — several days old — June 24th caged young queen (this queen was afterwards dissected and proved to be impregnated) the fertile worker did not interfere with her nor did the other bees — When she was removed the fertile worker [illegible] layed very freely — so neither the queen or bees had troubled the fertile worker — July 24th gave them a just hatched queen — 25th Removed queen and gave them caged an unfertile one — could see no drone eggs Colony swarming with drones — I helped them over to a frame of brood [illegible] the honey very much diminished, also the bee-bread which had been used up in rearing so many drones — Colonies deprived of queens this season have been very much crammed with bee-bread — but the combs of this colony are in a fit condition for a young queen — I've now taken the queen cages to see if the fertile worker or their drones can now resume business — August 8th After removal of last queen no signs of fertile worker

Do bees starve drones? Find drones that are being expelled are full of honey. Found drones of a queen more than a month old! June 26th caged a just hatched queen — July 25th after removing a laying queen at once liberated caged queen — well received — In two days attempts for mating [illegible] found her impregnated — about four days [illegible] or not — July 31st [illegible] — found [illegible] very closely attended around her — comes [illegible] different [illegible] — they do to a strange queen! [illegible] the last one — and then dead it goes [illegible] her first, her eggs were held — when near the flow for buckwheat came back — taking the hive — in a few [illegible] left [illegible] again two or three [illegible] returned unimpregnated — [illegible] not [illegible] fly- she came back at once — caught her to [illegible] again — [illegible] away a day. I did not see her return — she impregnated returned — [illegible] this again after the [illegible] when [illegible] after [illegible] became [illegible] laying —

A queen was born June 19th — caged on the 20th — July 13th — removed caged queen to another colony — 14th — liberated her — was seen [illegible] 19th queen laying — most of this queen all normal — worker brood — Huber's opinion that a queen whose impregnation was too long delayed can [illegible] [illegible] worker progeny — not correct — August 8th — Beautiful queen and [illegible] Will bees remember and for how long their queen — when presented to them after temporary removal? Removed a queen from a very full stock — two days after found queen cells begun — returned her — next day found her laying and queen cells destroyed — August 11th 60°. 80° — Hive much scented with buckwheat honey — [illegible] useful for lifting, [illegible] as well as drawing — A queen caged four days [illegible] hours after hatching but not opened two queen cells in a small nucleus — One [illegible] young queen inclined to [illegible] [illegible] both destroyed? Queens spin a very stout cocoon — being larger than workers they could. Returned [illegible] but as workers spin complete and queens incomplete cocoons — this seems queer queens' cocoons to be stouter! Important discovery for facilitating the rapid breeding of queens. Easy to get many queen cells — difficult to utilize them — My previous plans have all been attended with imperfect success — It would seem that at last I have succeeded — Have many queen cells constructed at intervals — When a queen is a few hours old cage her and give colony a queen cell nearly mature — at proper time cage this second queen and give another nearly maturing queen cell — cage her in turn and liberate first queen — when she is laying is known to be impregnated cage her and liberate the second — cage her when fertile and liberate third queen — even more queen cells might be used. By letting each queen lay before caging — the purity of the Italian queen may be tested — I find that in summer weather these young queens are almost always well cared for — and that in liberation [illegible] is well [illegible] I can thus get many more queens from each nucleus in a given time

My previous experiments had taught me how to preserve young queens caged in a single colony. This last discovery enables me to get them to be [illegible] — Have tried [illegible] — If from the piping of young caged queens the one liberated is able to decide — Keep a queen [illegible] between 2 and 3 P.M. — By caging young queens causes them to deteriorate in color. This would be an objection to the plan — August 8th — Am very successful in having bees attend to young caged queens after I give them to their own colony again — August 11th — After caging laying queen, but it was irregular [illegible] different — [illegible] — She was all right — ought not to [illegible] while laying [illegible] has been caged a day —

[illegible]

~~Age of queens~~ — The color of Italian queens becomes [illegible] affected by age — A queen [illegible] looks fairer than when she has been laying a year or so — The color of queens the 2nd or 3rd year [illegible] duller. Think that I can now testify [illegible] is one of the causes [illegible] the previous one — (2) the brood of the queen lost on the 31st [illegible] were [illegible] — Have two queen cells [illegible] next [illegible] — about 40 hours after queen [illegible] one of these [illegible] sealed over! Let it [illegible] and see what kind of queen will hatch.

My journal continued at [illegible] —

Hive—for Cases— Hive for cold winters see 2(16)=

i Hiving—see preceding Page H

15. Bottom board should be on a slant to aid the bees in carrying out the dead &c. to defend themselves but more particularly to carry away the perspiration and should be so constructed that this will run off—and not lodge to cause mould.

15. The hive should admit~~ting~~ of easily hiving a swarm without injury to any of the bees or requiring the destruction of the Queen.

17. The hive shd be capable of being adjusted to the wants of small and feeble colonies. and yet be capable of being enlarged to its useful dimensions

~~18~~. ~~Facilities for taking out or putting in comb with pleasure~~—without at all disturbing it.

19. Facilities for feeding both in summer and winter

20. Facilities for safe transportation

21 Facilities for drumming or driving out the bees—for any purpose whatever—

22. Facilities for inspecting at all times the condition of the hive—

~~23. Facilities for carrying off a current of air through top of hive to prevent damp—and mould—~~

24 Adapted to securing the greatest amount of pure honey that may be taken away and its place when necessary to be supplied with a cheaper article— ~~[illegible] here necessary for this~~

25. Facilities for admitting at once the external atmosphere—so as to warm up the hive and induce the bees to fly out and ~~cleanse~~ discharge their feces at suitable times in winter—

26 Shd admit of catching Queen at any time [illegible]—

27. Shd be convenient for smoking or uniting bees at any time

Hope that is in us, reason of — admirable thoughts. Phil. M. Pat. P. 80.83

Hillsboro Mills
1885
See R. W. of
inserted papers

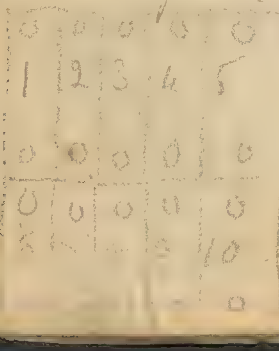
Hive. Defects do not fully show themselves until after it is used for two or three seasons. Thus a plentiful source of imposition upon the public — a judgement may be made by bringing before the eyes of the public can be opened — If the body of the hive is too large — the profit of the apiarian interfered with — early swarming prevented. A hive may be made of such a size that it will never swarm and never yield any surplus honey. If too small the bees will not have room for storing honey and breeding bees — they will be tempted to breed in the boxes for surplus honey.

Value of — Every man of common sense may judge of the value of a hive for himself — if he will test it by requisites which I have laid down — It ought to contain if possible the whole of them — many tried by this test will at once be found to be worthless —

15A

Hive size of — About a Winchester bushel bees in such a hive throw large swarms — have room in any hive — can lay up store honey so that when a bad season comes they have a supply —

Surplus Honey Receptacles — Feb. 22nd 1868 — I think very highly of Coult & Allen's [illegible] of small boxes holding a single comb each about 1 1/2" thick — Bees will work [illegible] in proportion to the wax and labor expended, it holds most honey — [illegible] together — [illegible] — [illegible] in it [illegible] as much surplus stored as in large boxes — and in the most saleable form —



Outside measure of box 10 X 4.75 X 2.875 — } Hive with 10 frames 20 boxes = 70 lb
Inside measure — 10 X 4.75 X 2.25 } " " 13 24 " 84 lb
Contents of box 98.85 — about 3 1/2 lb of honey — } Honey Boards — 20 3/4 X 15 3/4 and 20 3/4 X 19 1/4
Two inch holes in each box [illegible] — [illegible] the boxes have holes on top and bottom
perfectly [illegible] 1/8" thick [illegible]
[illegible] 3/4" [illegible] 5/2" [illegible]

Honey – In most parts of the Northern and Middle States the honey harvest is very short and all pecuniary profit will depend upon having powerful colonies at the right time – Early breeding in these sections of the utmost importance – ordinary swarming hives of but little value in giving surplus honey – This one reason why so little effected by any of the patent hives – It will usually be found that when such hives do yield any spare honey either they have not swarmed or they swarmed but once and that very early – Swarms must be doubled or if made artificially must be made very large to succeed in storing much surplus honey – unless they are unusually early – If swarming hives of the usual kind are employed it is very obvious that the old plan of taking up the bees is the right one. In regions where there are abundant supplies in August and September – swarming hives will do better – From the above remarks it will appear that the securing the largest harvest of honey is not consistent with the most rapid multiplication of colonies – I do not, however, at all recommend the ordinary non-swarming system of management – as bees managed in this way do not work as vigorously as new swarms – and ~~have~~ soon have old queens – and are also liable to perish from becoming Queenless – but I rely upon my doubled or artificially strengthened swarms for honey – or my very powerful artificial swarms – Suppose that I have 12 swarms at the beginning of the season – If they do not swarm as soon as they are sufficiently numerous to throw good swarms – I make Art. Swarms, but even if half swarm naturally – by setting each new swarm on the spot where a stock stood that has not swarmed and managing in my way – I can make my doubled my swarms even if only half the hives swarm – If any of the doubled hives have old Queens these allowed to remain – until the young ones in the hives which have swarmed are nearly ready to come forth – sealed Queens taken to replace the old one – In this way no Queen need be kept later than the Spring or early summer of her 3d year – If casting is prevented and the first swarms were early surplus honey may be expected from the old stocks – If casting is permitted or Art. Swarms ~~have~~ made they will coming early lay in a good supply – and make good stocks for another season – If the greatest amount of surplus honey is my object I end the season with 18 stocks – If I wish to increase my colonies more rapidly, still 6 hives yield large surplus stores – If a hive swarms – half of the bees may be taken to strengthen the swarm it fr. one wh. has not swarmed – young bees will thus be at once hatching – By having the bees managed in this way perhaps more honey will be secured than by the changing plan – A winter feeder almost indispensable when hives are moved in breeding season

Honey. Directions often given for removing from the hive very unsafe— If taken away in large pieces the Queen is often taken away with it and the colony materially injured if not entirely ruined—

Receptacles for— If much honey is consumed in making wax— then the apiarian sh'd aim to have his spare honey stored in as small weight of wax as possible— Hence the shape and size of receptacles for surplus honey very important— the bees sh'd be encouraged to store it in regularly shaped cells not too deep— Tumblers require too much capping for the amount of honey— square receptacles for say two combs best— not too high— or else comb will be made too heavy— not higher than six inches— This question ought to be subjected to the most rigorous demonstration— The amount of honey requisite to make a given amount of wax does not appear to me to have been ascertained with sufficient exactness— I have found that if during the height of the working season small receptacles be used— these may be constantly taken away a few at a time— and if their places be supplied with new ones containing small pieces of comb— the bees will at once proceed to refill them. In this way the taking away of small quantities at a time may be made to stimulate the bees to increased activity whereas every experienced apiarian knows that the taking away of honey in large receptacles greatly discourages the bees— so that they will often refuse to work in the empty boxes presented to them— Hence although bees may not work to as much advantage in tumblers or small vessels as in large ones, yet on the whole more work may be got out of them in this way than by the use of large boxes—

Huber. Many of our American works ridicule Huber—and yet draw—without any hesitation upon his discoveries—containing scarcely anything of value not found in his writings.

Honey— By putting in empty frames at the time any particular kind of honey is gathering—it may be secured— If put bees are in them at a favorable time—double a swarm—and get them honey—

Honey— The use of the Mov. Frames enables us to take honey from the main hive when the Fall supplies of buckwheat &c promise to be abundant— Honey may then be safely taken from the main hive and the bees will very speedily replace it—

Quantity— If this the object—take out frames with the sealed honey—cut off caps—drain out honey—save comb to be returned—when sealed comb removed the empty ones to be inserted— In the very height of the gathering—frames might be removed as soon as or even before bees began to seal over—

Inability, objections urged on this ground to loving God, ably answered by Howe. (Blessedness of the Righteous. Chap XVII)

Hive— Necessary requisites of a good one continued—

28- Should allow of the admission of air in some way independent of the entrance and so that the hive cannot be choked up by snow—

29- Sh'd admit of the surplus honey being taken in beautiful, convenient and salable forms—

30- Sh'd admit of any piece of good comb being given to the bees instead of being melted—

31 The hive sh'd be fastened permanently on its bottom board— to facilitate removal and to prevent the moth and worms from finding lurking places between it and the hive—

~~32~~- There ought to be no place where the moth can find admission into the hive except the place where the bees enter—

32. Should be adapted to secure the largest amount of honey to be used in aiding destitute stocks— this will be mixed with bee-bread but will be all the better for that

33- Should be adapted to secure the greatest amount of breeding— so that when desired the force of the colony may be directed to this—

34 Should have no doors, slides or other fixtures which are liable to swell, shrink or get out of order— and sh'd have no joints which are not water tight—

35- Sh'd enable the Apiarian to effect a dislodgment of the bee-moth if it has gained the upper hand in the hive

36 Sh'd admit of all operations being performed without any serious risk from exciting the passions of the bees—

37. Sh'd allow of the removal of all drone comb from the main hive—

38- All these requisites shd be so combined that one does not interfere with the other and the total result is a hive which can be managed with ease by any ordinary cultivator -

39- The ~~combs~~ bees shd be compelled to construct their combs with perfect regularity ~~[illegible]~~ which they will often fail to do if left to themselves

40- Should enable the Apiarian to transfer the excess of bee-bread from the old hives to those which are deficient in this important article

41- ~~The means~~ Shd enable the Apiarian to furnish destitute colonies with the means of obtaining a new Queen -

42 While the hive is well adapted to those who are prepared to enter upon bee-keeping on a large scale - it ought to be suited to the wants of those who are too timid or too lazy to manage bees in any other than the common way -

43- It should enable a single person to superintend the bees of a large number of persons - with as much certainty as a gardener superintends the grape vines of his different customers

44- It should furnish some place acceptable to the Apiarian where the Bee-Moth will be tempted to deposit her eggs and the worms when full grown to wind themselves up in their cocoons -

45- Should enable the Apiarian at any time to procure comb as a guide to the bees in hiving or empty hives - and as an inducement to them to enter the surplus honey receptacles -

46- It should allow the combs to be removed without any jarring

47. Shd allow of the rapid multiplication of colonies by artificial swarming

47. It shd enable the bee-keeper if he allows his bees to swarm and wishes to secure surplus honey to prevent them from swarming more than once in a season

48- At the same time should enable the Apiarian if he relies on natural swarming and wishes in this way to multiply his colonies as fast as possible to make vigorous stocks of all his after-swarms

49- Shd be adapted to the reception of those who wish to manage bees on the

50. old fashioned plan - and have neither taste nor knowledge for any improvements.

The hive and fixtures should ~~furnish~~ present a neat and attractive appearance - and thus the [illegible] of bees made highly ornamental for those who regard it

51- No expense Apiary -

52- Ranges of hives in one structure

Increase of Colonies. to the greatest practical limits inconsistent with securing surplus honey — In many sections of country where the honey harvest is soon over, where bees swarm but once there will be little or no surplus honey obtained — In the management of bees I have often been reminded of ~~Napoleons~~ the secret of Napoleons great success in his military operations — ~~The bee~~ Superior forces — at the right time in the right place — He who would be a Napoleon in the management of bees — must be sure to have powerful colonies at the precise time when the work of laying in the surplus stores of the season is to be done — A general may have his forces so situated that the more he has the worse he may be off — and if swarms are weak when forage is abundant their after strength when more honey is consumed than is gathered may be a positive loss to their owner — A swarm cannot be too powerful when supplies are abundant and they have ample space for storage — all beyond what are necessary at other times are more than useless. Hives insufficiently protected and bad management often results in feeble colonies when supplies are abundant — and strong ones when strength is too late — In regions where there is abundance of buckwheat or late supplies the evil of such a system will not be so seriously felt — as the bees even if not strong in numbers until late in the season will still be able to gather largely from these late supplies — The swarming plan as ordinarily managed in most locations only suited to the old system of "taking up the bees."

Increase of Colonies. Plan for a moderate increase suited to regions where abundant supplies in early part of year but midsummer or none late — See Journal — for Jul 1st 1862 — In lifting off the top [illegible] comb for supplies surplus honey — have if possible two empty combs to replace them —

3 See Di — this paper —

Impregnation of Queen — The three Queens dissected by Dr Leidy prove the existence of a spermatheca — Retarded Impreg^n the great mystery now — (1st) Let wings be taken from a young Queen before Impreg^n — see if she will lay — (2) Examine young Queens to see before Impr^n the condition of eggs in their ovaries — May they not lay at times without the male? (3) Keep young Q. in small wire box in a hive accessible to bees — with drone and worker combs — see if any eggs laid — (4) Examine retarded Queens to see if they are impregnated — (5) Touch drone eggs — leave them in cells — put some of worms a few days old into worker cells — try to put eggs also — Touch eggs of retarded Queens —

Worker changed to Queen by larger cell &c why not drone to worker by impregnation —

Feb. 18th 1861
Impreg^n of Italian Queens

Entice, by feeding liquid honey, a stock having Ital. drones, to fly an hour or two earlier than do common drones — Put then with them (see p. 127 of my book) an Ital. queen a few days old, and let her fly in front of this hive — (She should have had no chance to have to linger [illegible] she could not have gone out for impregnation) — The thing might be so that we could see the drone and pick him up to learn for certain that he was an Italian. By closing entrance of hive when drones out (see Mr [illegible] "Impregnation" on impregnation) we might keep the queen close to the hive and thus secure the impregnation of other drones than [illegible] the having advantages — 1st Would not lose so many young queens — 2nd Be sure that our queens are impregnated by Italian drones — even if we or our neighbours have black drones — 3rd Can not only breed queens from our best Italian queens, but can have them impregnated by drones from a queen producing the best workers. So that we can make it sure until a long period after the impregnation, that our queens have been impregnated by Italian drones — (over)

Indigestion, — Effects of upon 1 body. 1 intellect. + heart. (Dyspepsy forestalled. Sec. (17.)

Italian Bees Temper Feb. 18th 1851 } My [illegible] [illegible] [illegible] [illegible] greener [illegible] by experimenting [illegible] do not appear better tempered than the black bees — If this holds good generally may be not yet a test of purity

Indifference to cold — } My [illegible] [illegible] do not appear in this respect to differ from the common kind. May be not [illegible] [illegible] [illegible] test

Importing Bees Jan. 2d 1857 } [illegible] with [illegible] in importing [illegible] by [illegible] result of [illegible] in packing them for a sea voyage — [illegible] [illegible] [illegible] for [illegible] — a box [illegible] [illegible] [illegible] —

Square box with partitions for 4 nuclei — Nuclei frames running in grooves — one [illegible] 1" [illegible] drawn at bottom of [illegible] [illegible] [illegible] each box to have a tin slide perforated to [illegible] [illegible] 2" below bottom of frames — to be drawn out ~~[illegible]~~ about twice a week — so as to remove [illegible] [illegible] [illegible] [illegible] in [illegible] perforated to [illegible] [illegible] — [illegible] of [illegible] [illegible] 1½ inch hole covered with wire cloth [illegible] to [illegible] light to have [illegible] [illegible] on it. [illegible] with sponge [illegible] [illegible] [illegible] [illegible] hole (a) — Air [illegible] [illegible] [illegible] [illegible] (b) Keep a comb of nuclei bees [illegible] in grooves [illegible] [illegible] — 1 hole in top of each lid with sponge put in hole [illegible] [illegible] [illegible] [illegible] of sponge — to keep in place — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to [illegible] [illegible] [illegible] [illegible] [illegible] — Drink once ~~every~~ three days after opening Gently draw out [illegible] and at once push back the tin slides — give the bees ~~[illegible]~~ a little spoonful of clean water poured into each of the top holes provided with sponges — In three days more — ~~[illegible]~~ pass out all [illegible] [illegible] [illegible] at the bottom of cage — If any [illegible] [illegible] [illegible] when the slides were first pulled they will be dead — Many open and shut the slides and give water as before and repeat the same every three days — Keep the box in a cool, dry and dark place —

My Journal continued from 44 – August 2nd – 1866 – (1)

[illegible] to 84° – Splendid corn weather – Bees work vigorously on buckwheat – A stock of black bees seems to work most in proportion to their strength – Have before suspected that black bees [illegible] more on buckwheat [illegible] than Italians – Regina bellissima – A stock of black bees reared several very beautiful queens from Italian eggs – one the most beautiful I think of any I ever saw – So much for Mr. Kirby's theory – Colonies feed a little every night perfectly swarming with brood – Important suggestion. Feed moderately in September – or late in August – if bees are not inclined to raise brood vigorously so as to get late bred bees for wintering – Last year breeding stopped early – eggs [illegible] queens [illegible] laying [illegible] Oct I could not test them – this makes the [illegible] too light in bees to winter well – and too many of the bees were old – I think that for many years of [illegible] feed late that I did this season have secured some [illegible] [illegible] – Important – August probably the best month for breeding Italian queens – the stocks not [illegible] and consequently [illegible] bees for nurses – weather warmer and more settled than in [illegible] Much drones not so numerous – In September a second crop of the drones – Have found more queens mismated in that month than in August – (3rd)

69° 84° – But little done on buckwheat – at 6 P.M. – very heavy thunder showers – Yesterday caught two curculio on a fine green apple – they have been very destructive this season – Humble Bees – Smoked a colony in the [illegible] – they gave [illegible] as honey bees – the queen came out very [illegible] – dispatched her [illegible] [illegible] her ovaries [illegible] full of eggs – did not find her [illegible] – brood plenty but no honey – 4th [illegible] 84° – Thermometer on window ledge – not a fair exposure – would show 2° or 4° degrees warmer or cooler on a fair exposure – Gave a ~~[illegible]~~ comb containing mouldy to a good nucleus – they cleaned off the mould! Uncaged a queen on the 4th day after impregnation – at 11 A.M. – she had not began to lay at 6 P.M. – Was fortunate enough to find a queen on a comb where she had laid 9 eggs – so that I am sure as to the very minute when these eggs were laid – shall watch their development with the closest care – Caged a just impregnated queen and gave a queen some fifteen hours old – soon after hatching on an hour found her already confined by the bees – Caged another queen supposed impregnated – and liberated an unimpregnated (2) caged queen in some nucleus – seemed to be well received but some few of the cells not fixed here — Very important to test this point fully so as to see if when one is caged it will not be necessary to wait some time before liberating another —

Some queens which have been caged for a few days when uncaged are long in destroying queen cells — Does the disposition to destroy queen cells prevail most strongly in quite young queens —

Important experiment proposed to ascertain whether the honey eat by the queen secures the development of the eggs in her ovaries — or whether the bees feed her with jelly created from pollen — or whether the contents [illegible] from pollen — Take a very prolific queen with a strong nucleus — give them combs with honey but no pollen — confine them in a dark place — give them liberty at nights — see how long queen will lay — if she stops laying — give a lot of bees actively brooding eggs & larvae and see whether she will resume lay —

Give to a just impregnated queen hatching and just hatched bees — with no pollen — to see how soon she lays —

Showers (with thunder) passed around us — Very little honey from buckwheat to-day — A nucleus with unfertile queen from which all the brood had been taken stuffed with plenty of honey — since I have been so careful to keep the nuclei in good heart have had very little stealing — have more nuclei this season than ever before — and have had only two or three desert — (5th) 70°. 88° — Very hot close sweltering weather — Thunder showers passed at a distance — A week ago heard that my imported bees from Italy had arrived in New York — they left Dzierzon's on the 5th — arrived in New York on May 26th — were not opened until 30th — Out of honey — in one of the combs close — on another not a drop — bottoms covered with a mass of putrid bees — queens again all dead — only three (3) alive — Mr [illegible] gave them to [illegible] hand — and all are just like the bees — [illegible] are doing well — [illegible] many workers — [illegible] only young workers or better able to endure the confinement [illegible] the young hatching bees and only young ones a very [illegible] way of introducing a queen [illegible] that they are [illegible] — Caged yesterday [illegible] queen — gave [illegible] old queen — [illegible] cage [illegible] — some of the young [illegible] in the cage — A queen caged and [illegible] three days [illegible] queens — Experiments

August 24th 9 1/2 A.M. — Gave a good comb (some few [illegible] still to hatch in it) [illegible] the queen — 10 1/2 A.M. [illegible] eggs — examined every hour and no more eggs laid until 5 1/2 — found the queen then on the comb and 12 eggs laid — none of the twelve must have been laid only a few moments before examination — (25th) 9 1/2 A.M. Queen on the comb laying — comb pretty well filled with eggs — the [illegible] eggs were laid at 9 1/2 A.M. — [illegible] — Caged queen — Gave [illegible] a just hatched queen — a few hours later found young queen all right — the nucleus strong and in good heart [illegible] — Shall in a week or so remove all the combs with brood except the [illegible] — watch to see when the first and when the last bee hatches — Shall feed a little daily —

Experiment - Caged July 31st 2 3/4 P.M. - a just impregnated queen - August 4th 11 A.M. - liberated queen - examined at intervals of an hour at 6 P.M. - no eggs - (5th) 5 A.M. - eggs - Shall cage again in a few days ~~and see how~~ long before she lays when liberated - (6th) 10 A.M. - caged queen - 10th - Uncaged at 9 A.M. - 9 1/2 A.M. - not an egg - 10 1/2 none - 1 1/2 P.M. - none - 5 3/4 P.M. - 20 eggs - queen about two hours before she began to lay - everything very favorable - had been laying freely before caged - In a few days shall cage again - 11th - 9 A.M. - caged queen again - 16th - 7 A.M. - Uncaged queen - 9, 10, 11 A.M. - not an egg - 2 P.M. - none - 6 P.M. - laying briskly - 17th - 12 A.M. - caged again - 23rd - 8 A.M. - uncaged queen - 11 A.M. - not an egg - 3 1/2 P.M. - not an egg - 6 P.M. - one egg - This queen is now accustomed to being caged - About two hours seems to be required before she can resume laying after being caged - Shall try her in a week longer and they will see - (~~Cage tomorrow night at 10 P.M. - Uncage at~~ ~~Next time uncage~~ ~~queen at 10 P.M. - having caged her only~~ Next time cage queen as soon as she lays freely at 10 P.M. - uncage her at 8 A.M. - and see if her power to lay is enfeebled in that [illegible] to return to laying - Put her when caged some days the same [illegible] will her power to return to laying - with hatching and just hatched bees and see whether results are different - first with pollen - then without -

(5th) I find it rare to have Italian bee queens [illegible] — More warmth does not cause bees eggs to hatch — Opening combs with eggs — old bees in cells as if feeding — this in cells with fresh eggs — What do they do to them? — Drones expelled early this [illegible] — [illegible] were filled with honey — Fertile worker lays in queen cells — In a colony with nothing but sealed brood and sealed queen cells have noticed a queen cell building for several days — thought it merely a false cell — [illegible] there were [illegible] it open — saw eggs near the bottom on the side — jelly in first one — the cell was so much broken that eggs were removed by bees — so they had no cells such as fertile worker prefer to lay in — gave them drone comb —

Stealing — a strong nucleus — mostly young bees — with a [illegible] has had most of its [illegible] honey stolen — (6th) 70°. 82° — Heavy rain during the day with thunder — Important — A colony in an old box queenless! July 13th — drove out [illegible] bees — got old black queen — returned bees — 16th — Gave fertile Italian queen one claw defective — The swarm was accompanied by a young Italian queen! (7th) 68. 74° — Found a young Italian queen dead on bottom board of hive that swarmed yesterday! While driving the stock [illegible] to see if the queen [illegible] there — this shows how [illegible] lose their queens [illegible] times —

(9th) In all my removing of Italian queens from stocks [illegible] it is very rare to notice any signs of queenlessness — Useless Cells — Often notice combs or parts of combs with cells on one or both sides very [illegible] and edges very thick — Even when such combs [illegible] bees never [illegible] cells and they ought to be cut out — Important. Black bees [illegible] combs when [illegible] queens much more inclined to leave their combs than Italian queens. This in addition to their colour makes it so much more difficult to find the black queens —

(3) In giving just hatched queens to colonies from which their queens have been removed they are occasionally lost & not killed I think but dragged out — If a queen whose cell is prematurely opened and who is very weak is given to a colony she is often dragged out and comes off by the heels without being hurt! Experiment — Try if giving these queens which have been an hour or so on the comb may not be better — than simply put them when just hatched with bees on comb into empty box — till they get "the hang" of the comb —

(6th) 5th. 76 — To get bees off from the hands — make a light quick flapping of the hands or fingers with the whole arm — Are impure Italians which most closely resemble pure ones crosser than those which more resemble the black bees? Whistling, roaring noise made by bees as they enter an opening when swarming or the change of hive attracts other bees to run in same direction — also queen — Some bee-keepers think that if they make a whistling sound to imitate this hum or roar the bees enter quicker — If young queen or just hatched is put at side near the entrance they make to it — guided by the same hum —
Bee-bread — The nuclei which were a short time ago supplied with bee bread have pretty well used it up — So we are in being alarmed too soon with the return of receipts of bee-bread —
Drones — All very good colonies are rearing drones even those which are not fed — Is it effect of honey yet — or effect of this great stimulus to breeding — Am afraid that black drones will soon be [illegible] — Have had very few mismated queens this season —

(9th) 60°..80° – Beautiful day – thunder at a distance in the P.M. – (9)

To get bees out of honey boxes. This A.M. – put [illegible] boxes of honey crowded with the bees into an empty hive set on the grass – covered it all over carefully with a sheet – At dark not a bee in the boxes – Jaws and teeth of queen – were figured in [illegible] man – Easy to see how she bites – cuts the cocoons – queen cells [illegible] cells – The only colony I know of where black bees have [illegible] promptly on [illegible] this A.M. – better than any other I [illegible] – although not [illegible] strong — In making nuclei – use [illegible] brood from untested queen – if eggs are taken from tested queen so as to have any queen cells [illegible] — Drones – Italians that were killing off drones a few weeks ago [illegible] without feeling or abundance — My [illegible] queen of 1864 – [illegible] nearly three weeks ago [illegible] a nucleus [illegible] given to a strong stock [illegible] [illegible] without feeding — (10th) 70°..80° – Heavy shower with thunder in the night – [illegible] to day [illegible] two before queen cells opened on the [illegible] – [illegible] in hive [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] they are [illegible] [illegible] P.M. [illegible] [illegible] [illegible] [illegible] a piece of [illegible] [illegible] [illegible] to see [illegible] [illegible] queen given for 24 [illegible] [illegible] [illegible] queen [illegible] a week ago – [illegible] a colony whose queen [illegible] [illegible] a week ago – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] a [illegible] [illegible] queens [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Great swarm – At 8 P.M. – [illegible] a natural swarm which [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queens and laying young [illegible] in hive together – [illegible] queen [illegible]

stocy — Found two sealed queens destroyed — [illegible] the
unsealed without — Italian [illegible] lifting queen led the swarm —
Hived them giving two frames of honey sealed — the frames about
3/5ths full of comb — comb from — nearly and some empty — [illegible]
new combs to be wholly empty do — In trying to get a fertile
queen out of a cage she took wing — was trying to the [illegible] a
distance — Shook off some bees from a [illegible] comb, — and
as they flew back to their hive — she went with them — bees [illegible]
upon her as she alighted on portico entrance — [illegible] her safely — When
a queen takes wing, always see that bees (sowing if possible) are
on the wing — and she will generally go to them — 11th — 64°.. 75° —
The change to cooler weather has impaired the flow of honey in the
buckwheat — next to nothing done by bees to day — the new swarm
had frames of honey given — doing next to nothing — but for white
[illegible] yet to be done on 2nd crop of red clover — [illegible] swarm
of July — fed for drones — with queen cells preparing to swarm —
If there should be anything to get my colonies to be filled
with bees that they could take advantage of it — Have been [illegible]
[illegible] them in Spring in June — the sound made by queen quite
distinct from that made either by drones or workers — About [illegible]
Seems to [illegible] [illegible] preference for imprisoned queens but when I [illegible]
all queen cells removed, so that if a fertile under [illegible] queen
or [illegible] queen cells [illegible] be there it will be accepted — she will be
killed or balled — Gave laying queen to colony with young unlaying
one — a bee quickly seized her leg — she was soon [illegible] & she became
a prisoner — removed her from them — Wide topped frames — If
combs are not true cannot be seen — and cannot cut them —
Must have a tool for prying or lifting up frames to lower them on
the rabbets (12th) — 56°.. 71° — Too cool for much bee work on buckwheat

Beautiful Observations – on Instincts of Bees.!! (9)

In hiving the great swarm of the 10th I gave them two outside frames (1 and 10) empty of drone comb so that as a queen wishing to lay drone eggs would have readily accepted for her eggs – next two combs (2 and 9) filled with sealed honey taken from a full stock – 3, 4, 5, 6, 7, 8 – frames about 2/3rd full of new comb – not wrought to full depth much of it – such as would require considerable labour (& consumption of honey) to rear brood in) but such as in a good honey gathering time would be at once used for brood & more expeditiously done completed – Since the bees have been hived very little honey gathered – too cool – the bees were evidently discouraged because the combs they [illegible] two on one side and two on the other – Opening this I thought I found not an egg in the drone combs – although the queen had been laying three eggs daily in the hive here! In one frame honey was capped near the bottom and worker eggs laid! the other frame had 3/4th or more of all the capped honey removed and was full of worker eggs! – in an ordinary state of affairs this honey would not have been uncapped – Not an egg in the drone combs which to be used for breeding would have required [illegible] one of these combs was mostly drone – and as much as two of worker cells had been built upon the lower edge of the drone cells – for the queen to lay eggs in! Still look at the comb [illegible] to see if much of it is not drone comb – the whole proceeding of this swarm shows an admirable reasoning faculty –
I have put the two drone combs on the outside (frames 2) and the combs that had honey (3 and 4) – then the queen not [illegible] till the bees were fed [illegible] by the [illegible]
15th – Bees have felt [illegible] – nearly all the sealed honey [illegible] of the two combs – the two empty drone combs nearly [illegible]!
August 23rd – Another swarm removed sealed honey to give queen room for eggs and put it in drone comb –! Two swarms had queens taken from them – and began to raise queen cells – raising many – they have of course let sealed honey given them alone –

Nails under bottom of 2nd story outside of where it rests on hive - very important as feet to hold this 2nd story when lifted off and set on cover of hive - so as not to hurt bees -

When cutting out & removing queen cells and killing workers it is interesting to see how some bees set out to repair damages - often before hive is closed - by yielding to despair! -

If poison of sting at once washed off bees not so likely to sting + hands - Important - To be sure of seeing all the queen cells the bees must be shaken off - some cells so flat and nearly covered up as to be difficult to see unless bees are off - Many queen cells!!

August 7th removed queen from a strong stock - This P.M. - found 36 (thirty six) perfect queen cells - & 4 imperfect - 10 from which queens had hatched - 12 which had been gutted - found one queen at large - another hatched while I was examining hive - one young queen head first in a cell - playing possum - seemed to be dead until I pulled her out - since it was placed in front of hive - do not remember ever seeing more or so many perfect cells - To know from what hive swarm a swarm has come - after hiving - and removing - shake out a handful upon the ground - they will soon return to place they left - 13th - 69°. 84° - A colony to which fertile queen given two days ago swarmed! Swarm returned - thought I had removed all queen cells - but found a young queen piping - in [illegible] - Removed a fertile dark queen from a strong colony - Gave caged queen - Laid this queen caged on back [illegible] hive - bees have been around her and fed her ever since +

Experiments to test the time requisite for development of Workers, Queens and Drones—

August (4th) 1866— 9 1/2 A.M.— Gave a good comb to nucleus with fertile young queen — 10 1/2 A.M.— 4 eggs— Examined at intervals of an hour— none at 4 1/2 P.M.— at 5 1/2 P.M.— queen on comb and nine more eggs just laid— (5th) 9 1/2 A.M.— Found queen on comb laying— about [illegible] eggs had been laid— caged her at once so as to get the very minute when the last eggs were laid— (8th) gave this comb to a good nucleus well provided with honey, bee bread and bees of all ages— 12th— 6 P.M.— no cells capped— 13th— 6 A.M.— two cells capped— 10 1/2 A.M.— 19 sealed over— 2 P.M.— over 60 capped— (14th) 6 A.M.— about 20 still unsealed— 10 A.M.— only two unsealed— 2 P.M.— the last one *almost* finished— the first sealed in [illegible]1/2 hours less than eight days— supposing the ones first sealed were the ones first laid— the last nine days and 4 1/2 hours— supposing the ones laid last were last sealed— this gives a variation of over a day— I have no doubt it is often greater—

(14th) 69°. 76° – Heavy showers with thunder – bees worked well a short time after the showers – worked late after 12 M –

Important – In opening colonies takes too much time to blow smoke into mouth of hive – if not done some bees rise into air before they feel smoke – are angry – by their sound make others angry – they Let them alone for a few moments – step to something else – when all have ~~lited~~ alighted come back – I often continue with the angry ones!

(15th) 69°. 78° – Splendid corn day – bees very busy early on buckwheat –

Experiment – Cage a few workers with young queens to see if they will not attend to – and feed her – or [illegible] – Queen colonies hybrids very numerous to day – I gave just hatched queen a first year [illegible] entrance on shifting apron – marched without any delay into hive! Important If a queen takes wing from a colony instantly shake down bees to set them flying – queen joins ~~see~~ them and joins them as they enter hive – From an extra large queen cell – a very small queen born – When sun very hot – easiest to work on hives – bees most peaceable – propolis soft – A nucleus ~~[illegible]~~ – Young bees which could not fly tried to join – unwisely if a swarm merely? – In taking down queen cells the bees are a long time in disposing of the second-[illegible]

(16th) 64°. 76° – Cloudy occasionally – bees work well on buckwheat – When quite young queens get off the comb in opening hive workers often seize them – not hurt them – Does your mother know you are out? If old queen is shaken down suddenly and [illegible] by [illegible] workers at once seize her – if she was a strange queen would hurt her – Important – Avoid all agitation of queen to be introduced to a strange colony – Buckwheat – bees thought [illegible] thick bees were, more than half – flew up I believe thick ones – weeds make them fly as though they were robbed [illegible]! quite a sell! Thames – clean [illegible] – good place for keeping caged queens between the frames – Do black drones fly more readily in the dark I think so than the yellow ones? – I think black queens seek more readily dark drones? hereafter – A colony with impure or mismated queen with any purely black being left been repeated often to find queen – very peaceable – Something be gained by breeding only (queens) from large queens reared in strong hives – and strong and long? I always [illegible] out on board to see if she is really [illegible] attached with bees! I always put [illegible] the [illegible] when on the comb which they are shut up!

Long passages in honey-board — [illegible] burning smoke so as to affect the whole colony — Drones — colonies very full of drone brood — feel sure more crowded if [illegible] than in queens — My stocks of pure Italians have more honey than the half bloods — (17th) 56°.. 74° — cool — cloudless day — Decaying queen cells —

(18th) Yesterday

~~Today~~ at 6½ P.M. — two queens arrived of my Ital, imp [illegible] — from Italy to Dzierzon — then prepared for journey — sent to Hamburg — New York — fed by A. B. Hall — [illegible] 23 — given to Express on Thursday 27th July — reached Bristol Pa. — (less than three hours journey) Saturday night 11 [illegible] by C. A. Taylor next day — one box had queen alive and two workers — the other two queen and from 6 to 12 living workers — The bees left a compact mass in the boxes — the heat and [illegible] nearly killed them — six hours more and all would have been [illegible] — Dzierzon puts up too many bees — better plan to put up only young bees — old comb — plenty of sealed and unsealed honey! Heard of their arrival on the 5th — Telegraph — Send two queens immediately — very few bees — [illegible], Taylor got it — Send two queens in my — very new boxes! Sent a letter Thursday — reached Taylor too late to send last week — He shipped them Monday — Got his express receipt Saturday A.M. — Expected them by that P.M. — Supposed all right — no brood — no queen cells — If they had come would have lost the best one designed for that stock — cut [illegible] yesterday — having slip decaying queen cells (see above —). One queen very small — quite handsome — introduced her yesterday to a [illegible] colony — but no unsealed brood or queen cells — all received this A.M. — a few eggs — Gave the other to the stock from which I removed [illegible] queen on night — this A.M. [illegible] her — having previously shaken out every bee and put on queen cylinder to be queen [illegible] of those two — night before gave them two sealed queens — there without — never saw more of as much [illegible] of bees — great demonstration of affection — Shall [illegible] this colony with [illegible] [illegible] continual deprivation of [illegible] queen [illegible] but only [illegible] — when laying they may show much larger — Shall [illegible] excluding to [illegible] queens as well as to [illegible] queens in —

My apiary is swarming with [illegible] [illegible] the [illegible] if [illegible]
[illegible] Italian queens – and to see with my own eyes [illegible]
queens, drones and workers that come from these queens – from the district in Italy where only the purest race is found – [illegible] [illegible] whether these queens were artificially raised or in swarming [illegible] – [illegible] from they being so small, the [illegible] [illegible] 19th – 54° – 78° – Beautiful day – [illegible] with dew at the [illegible] – air loaded with [illegible] from flowers – a few such days must make a great change in the [illegible] of my hives. [illegible] my [illegible] with [illegible] – [illegible] seeing my [illegible] at this [illegible]
At 11 A.M. – [illegible] stock swarmed [illegible] queen [illegible] [illegible] queen – [illegible] queen – There were 24 queen cells – the young [illegible] many queens had [illegible] and [illegible] [illegible] the first [illegible] because [illegible] queen [illegible] of their cells, [illegible] – they [illegible] like a company of [illegible] – cut out three cells – [illegible] queen cells – [illegible] a number of queens had hatched – [illegible] fine [illegible] – [illegible] of them! – one of the three [illegible] [illegible] hatched [illegible] – seventeen (17) – seventeen fine queens!! –
In all my reading and experience – never knew of so many [illegible] [illegible] [illegible] very much discouraged of anything [illegible] [illegible] [illegible] [illegible] to [illegible] – [illegible] swarming – may get a [illegible] [illegible] [illegible] [illegible] – long queen cells – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] either [illegible] queens – [illegible] three [illegible] on [illegible] [illegible] [illegible] [illegible] [illegible] yesterday [illegible] [illegible] [illegible] queens [illegible] long queens and drones need a certain amount of heat to [illegible]
[illegible] of [illegible] queens – 11 A.M. – for a long time [illegible] [illegible] to the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] large number of young drones which could not get [illegible] [illegible] [illegible] [illegible] after 6 A.M. – [illegible] [illegible] – [illegible] – very active – quite beautiful – [illegible] [illegible] of her eggs to a [illegible] [illegible] queen cells – 21st – Queen cells [illegible]

from eggs of Ligurian No (1) — This small queen very much enlarged in size — this A.M. — could find only one egg in the No (2) — Improper arrangement of the combs greatly discouraged this stock! the brood combs were too much separated — and not centrally — (I never [illegible] with sealed brood) — Arranged them properly early in the A.M. — and found the queen laying well in P.M. [illegible] [illegible] much encouraged — Gave them a frame with brood sealed and unsealed — not centrally — and in a way that the one frame [illegible] queen o'er it! It is an unnatural condition for a colony in the breeding season to have no brood to nurture — Should be right glad to see [illegible] young brood —

September 2nd — This P.M. — at 4 o'c a beautiful Ligurian queen hatched from my [illegible] queen — notice nothing peculiar about her as to size and color — if any peculiarity more Ligurian colour or [illegible] than the common run — this may be mere fancy — if so because they have not been bred so closely as the Parsons and Dzierzon stocks —

4th — I have now had quite a number of queens from my imported Ligurian stock — they are all beautiful — some quite small — this owing to [illegible] [illegible] — none perhaps quite up to the mark of the splendid queens I am now getting from a cross of the Parsons and [illegible] stocks — I do not notice anything to distinguish them as better than this stock — but I have no reason to doubt that the cross will be an improvement — Three or four days or two here queens from my large queen which has been bred in [illegible] stocks — Am very curious to see how they will [illegible] These all not so beautiful Ligurian to the colour but [illegible] for large-ness — yesterday and to day hatched several very [illegible] coloured queens from one of my Ligurians — The cells were reared in large colonies — but the bees were [illegible] — [illegible] [illegible] a [illegible] thing it may be that as a general rule the rearing of queens by [illegible] [illegible] or hybrid may cause [illegible] All of the queens from the other one were reared in [illegible] [illegible] and [illegible] [illegible] as yet — As these queens from the same queen (No 2) reared by [illegible] [illegible] from [illegible] (the queen cells from No 1) to [illegible] to [illegible] Those from Ligurian queen No (1) very beautiful — I could hardly distinguish them from [illegible] of my pure queens — I could not [illegible] [illegible] these queens if I did not wish to do so — [illegible] [illegible] that the [illegible] of blood in queens [illegible]

are a better stock —

62°..78° – Splendid day –

August 18th – Time of hatching of queens after removal of Queen – Just removed queens from two very good stocks – 12th – In one 36 good cells – 14 unhatched – 12 gutted – 10 hatched – To day in A.M. – Only one had hatched from the other colony! No certain rule – but ought always to look on the 10th day – Many August swarms have come off after 2 P.M. – A queen removed ten days ago and left on support of eggs of hive died this A.M. – bees have been last night attended on her – Splendid day for buckwheat – bees building new comb – When queen cells given to a queenless colony they often wax them over – a work of pleasure –

Sept. 15th – Have had many very mean queens from Ligurian No (2) – from queens reared by impure workers – The last day or two have had some handsome ones from cells reared by pure workers! The queens they reared by impure bees seem not so decidedly colored! – May be mistaken here – 16th – Have had some beautiful queens from Ligurian (2) – reared I think by pure bees – Have given a comb of brood from Ligurian (2) to a strong stock of pure bees to see what kind of queens I shall get – 20th – Many of the Ligurian queens are of a deep orange color after impregnation – Resemble many of the Parsons queens – more than the Ligurian stock – 22nd – A truly splendid large, dark orange fertile queen from No (1) – Common brood was given to a very strong stock – fed daily – that had no unsealed brood – on Sept. 9th – they sealed over a dozen choice queen cells – Examined on the 18th – all gutted – and nearly all traces of them gone! Bees strong – fed – had no larvae to feed – comb with eggs new – very early development of queens – Nearly every queen from No (1) Ligurian beautiful – nearly every one from No (2) very mean! ~~[illegible]~~ The comb from No (2) given to pure bees has many choice sealed queens – If these prove poor I shall at once condemn the queen – 26th – Two very beautiful Lig (2) queens laying – the color of Ligurian queens is more uniform dark orange – Pure queens look at [illegible] at birth – but before impregnation depreciated much more than queens usually do – October 2nd – Only two queens from No (2) queen cells – most of them were gutted [illegible] – one queen beautiful – the other splendid – Have had some very beautiful [illegible] from Ligurian (1) – one a splendidly colored queen – raised two in an [illegible] nucleus –

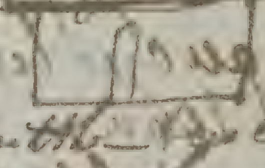
August 20th — 58°,, 77° — Splendid [illegible] on buckwheat — [illegible] letter. (8)
21st 60.80° — [illegible] in the [illegible] —

To get after swarms — Read daily — [illegible] is to get drones!! To get comb, and [illegible] hive for [illegible] on the [illegible]. Break up old hives!!! ~~(see page)~~ Discouraging arrangement of combs, see page

Gave a good [illegible] an empty frame — they began to [illegible] it vigorously — [illegible] [illegible] comb [illegible]! [illegible] little [illegible] bees [illegible] off from [illegible] — [illegible] — they at once [illegible] [illegible] Propolis — if honey boards be not properly fitting must be [illegible] by bees in gumming up with propolis — [illegible] the queen [illegible] — Mending combs by bees — [illegible] cuts in cutting out queen cells — [illegible] holes are not [illegible] by bees — [illegible] to advantage. Large cuts

[illegible] shall [illegible] — Winter passages — Some combs [illegible] several years ago had [illegible] old — [illegible] others —

— these [illegible] have been closed! In this way we can get a good [illegible] winter passages, [illegible] but one —



and make it [illegible] 2/6 [illegible] from bottom [illegible] 1/4 of an inch [illegible] — experiment [illegible] to see if [illegible] not [illegible] such a passage — if it [illegible] the [illegible] will be filled up — not [illegible] by bees — [illegible]

To make bees swarm naturally. [illegible] winter [illegible]

That we can always make a colony swarm by putting in a sealed queen cell! If the conditions are favorable for swarming. I [illegible] that it [illegible] clusters of 2lbs or [illegible] swarming [illegible] — giving queen cells to such as [illegible] of queens — I cannot [illegible] That [illegible] natural [illegible]

22nd 77° — Thunder shower in night — after day heat — at 7 [illegible] 72° — 7 [illegible] 65° — 8. 60°!!! [illegible] S.W. [illegible] to N.E. — no [illegible] of [illegible] honey of the [illegible] shower — [illegible] a 10 [illegible] — [illegible] for sealed queens — in an hour [illegible] — [illegible] that [illegible] — If the [illegible] had been [illegible] it might have [illegible] — S.S.'s plan to [illegible] with a sealed queen — Cage queen! [illegible] queens about a week old — one just sealed [illegible] — in a few days after they have queen cells [illegible] queen — [illegible] cage her [illegible] but when they have begun to seal their queens — This [illegible] to [illegible] how [illegible] it may prove — (Came [illegible]) nothing [illegible] when circumstances are favorable for swarming —

(23rd) 48° — 67° — wind [illegible] N.E. — [illegible]

Delay in rearing queens after removal of queen

Bees often delay beginning queen cells until the [illegible] is almost [illegible] — To day found queen cells in a good colony with six full comb of brood and [illegible] with the rear — on the 2d and 8th (the two outside ones [illegible]) in these eggs had been laid last — and the queen cells were not all sealed — [illegible] in the other cells [illegible] — Drones — Quantity of drones in all [illegible] strong stocks which have not been fed. perfectly crammed with drones — all brood and nearly all the honey gone — Triangular Guide [illegible] it [illegible] be made better to make the guide very acute — just large enough to [illegible] the two sides of the pentagon [illegible] on it and the main [illegible] of the comb to be [illegible] —

To hunt off bees from combs — [illegible] — Increasing queens [illegible] eggs [illegible] bees that they [illegible] rearing queens — [illegible] use a [illegible] for lifting out one end of heavy frames —

What class of bees go off with the swarm — old? young? or both? As all ages [illegible] the [illegible] of hive — would infer that all ages go off with swarm — To day this point fully settled — July 13th — [illegible] a very [illegible] Italian queen — the bees [illegible] colored — [illegible] a very large stock — crowded with bees and brood — [illegible] (14th) [illegible] eggs [illegible] July 12th — 15th [illegible] queen — [illegible] August 1st — Queen raised from her eggs [illegible] [illegible]

[illegible]

[illegible] — [illegible] could [illegible] this settle the [illegible] by [illegible] — [illegible] those that [illegible] of honey? [illegible] that return after [illegible] left — from the field [illegible] good [illegible]

A [illegible] case of [illegible] with large [illegible] & fully very white [illegible] day queen [illegible]
[illegible] like [illegible] consistence — Heard day before yesterday piping in
a stock — a large swarm — note repeated 26, 51, 46 times — yesterday heard
quanking fifty day both with fluttering — as though imprisoned queen
was trying her wings — In short [illegible] whether by adding bees from
the stock very rarely have any fighting — noticed this last year [illegible]
uniting stocks — year before [illegible] many new stocks by which I [illegible]
my [illegible] [illegible] — I think that a marked peculiarity [illegible]
[illegible] [illegible] — the roar which bees make when entering hive
attracts their flying companions — [illegible] down they make this roar —
[illegible] to escape [illegible] — settle swarm [illegible] [illegible] from the
roar of bees [illegible] to [illegible] the place where stone [illegible]
~~[illegible]~~ idea to be got rid of — the sooner we get rid of
the idea that what one bee [illegible] does [illegible] queen causes others
any other bee can [illegible], the better — no more [illegible] than of man — some
less simple, some more, some self willed &c — this rather fanciful —
Declining to raise queen cells — A good stock with all things right but
its queen removed — hived too far almost and a queenless [illegible]
it [illegible] [illegible] — 44h. 48°. 68 [illegible] beautiful day but
flow of [illegible] being almost all gone — 45h. 42°. 70 [illegible] S. E. — a
[illegible] — [illegible] queen [illegible] to —
[illegible] [illegible] — [illegible] dealing to [illegible]
new and [illegible] — [illegible] — [illegible] flow of [illegible]
[illegible] [illegible] building — [illegible] the [illegible] [illegible] they
select [illegible] almost as [illegible] as began — [illegible] queen [illegible]
[illegible] [illegible] [illegible] considerable attention — [illegible]
[illegible] [illegible] queens — [illegible] queen
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] — [illegible] beneficial [illegible]?
[illegible] before [illegible] — [illegible] queen [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] [illegible]
[illegible] to [illegible] [illegible] — [illegible] queen [illegible] before [illegible]
[illegible] [illegible] [illegible] [illegible] — [illegible] queen [illegible]
to [illegible] [illegible] [illegible] ought to have been [illegible] days ago — [illegible]
queen [illegible] [illegible] [illegible] day [illegible]
[illegible] had a [illegible] [illegible] day [illegible] [illegible]
wind S. E. — 70° — [illegible] [illegible] a [illegible] [illegible]
[illegible] [illegible] 70° [illegible] [illegible]

my old comb frame — but did not pair — Hope to get nearly through with queen raising in three weeks — 26th — 45° .. 75° = Beautiful day — Early in the [illegible] in one of the large quantities of dead larvae brought out of a strong stock — [illegible] it has been neglected feeding — but they merely declined to rear any more — The mortality that is going on in a hive best seen in these cold mornings when the [illegible] and a few bees are often covered with dew [illegible] [illegible] to queen bees — Ordering off the comb if you return the same time during them doing and they are much more quiet — Italian — Shook out too many bees to help a nucleus — and they [illegible] the few in nucleus — Bee hive [illegible] in many nuclei [illegible] that it [illegible] to be [illegible] from [illegible] being [illegible] when the brood is being put in so largely [illegible] [illegible] of [illegible] [illegible] — [illegible]

Queens only [illegible] [illegible] This [illegible] much richer in honey [illegible] There is [illegible] here [illegible] — [illegible] to [illegible] ~~[illegible]~~ queens if it [illegible]

27th — 45° .. 74° — **Triangular comb guide** — very important. [illegible] for [illegible] triangular [illegible] triangle — The very [illegible] [illegible] (2) — [illegible] of this [illegible] giving more surface for attaching the [illegible] [illegible] in the cells — they get a much [illegible] attachment than on a flat surface! My [illegible] guides much better — The [illegible] is this to [illegible] a triangle as may be [illegible] bees [illegible] when they are [illegible] large [illegible] to lay their [illegible] cells — [illegible] to [illegible] the [illegible] of the [illegible] [illegible] the flat part of the [illegible] — In this way with an equilateral triangle [illegible] △ [illegible] vertical section — ▽

If the triangle is 3/8 on two sides and only 3/8 on the base when [illegible] to the bars — then $3/8 + 3/8 = 6/8$ — $6/8 - \frac{2}{8} = \frac{4}{8} = 1/2$ = the attaching surface gained over a flat surface — $3/8 + 3/8 = 6/8$ [illegible] — the [illegible] surface gained by [illegible] a triangle $3/8 \times 3/8 \times 3/8$ = [illegible] of $3/8 \times 3/8 \times 3/8$ [illegible] This gain is enough to pay for the [illegible] of an [illegible] triangle △ [illegible] cut [illegible] — $4/8 \times 4/8 \times 3/8$ would [illegible] then $4/8 + 4/8$ [illegible] gain of attaching surface — if [illegible] $\frac{4}{8} + \frac{4}{8} - \frac{2}{8} = \frac{6}{8}$ = gain of attaching surface [illegible] an inch — we might then gain — if the bees [illegible]

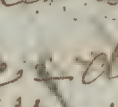
with 8/8 × 8/10 × 8/6 – neat [illegible] the [illegible] surface – [illegible] (13)
wide [illegible] [illegible] [illegible] [illegible] [illegible] free out – [illegible]
over while bees [illegible] build by [illegible] sizes and those vessels –
(28th) 52°.. 78° – Beautiful day – bees do considerably again on the buckwheat
but not so much as before the change in the weather – Stocks very busy at
drone killing – pulling out larvae &c those which have begun [illegible] at it
[illegible] but honey coming in plentifully! – Pins – are as many pins
as there are queen cells in a frame – A colony where queen has been for apparent
cause and are got a month of time – has destroyed those just hatched queen to [illegible]
when their queen has [illegible] – do they know that they are to have the queen again
It takes not over 16 days [illegible] at the very furthest – actively engaged in [illegible] –
more natural gathering honey or pollen – Whole [illegible] [illegible] taken by [illegible]
[illegible] [illegible] converted to [illegible] – and some [illegible] to crush bees – Ideal for winter
[illegible] [illegible] good for setting in queen cells – and good I find for
bees to work [illegible] cells to their edges, [illegible] [illegible] – [illegible] –
anything except these vessels are on hand – [illegible] very few compared with the
[illegible] – but must [illegible] – (29th) 62°.. 84° – Beautiful summer
day – Considerable done on buckwheat – [illegible] I think done on red clover – I saw
[illegible] on it – we have had the [illegible] [illegible] the [illegible] – [illegible]
[illegible] – at [illegible] – at [illegible] – it has
gone – acting like a natural [illegible] – [illegible]
[illegible] [illegible] come after [illegible] – [illegible] this P.M. – on buckwheat – and [illegible]
point – 30th, 31st – 80.. 84.. 86° – Splendid weather for corn – and for honey –
hives rapidly increasing in weight – bees very active on red clover –
|| September || 1st – 2nd – 3rd – 4th – Wonderful weather for corn – 87°.. 88°.. and 90° –
with [illegible] honey [illegible] flow of buckwheat being at its greatest – Buckwheat is now
in its prime – [illegible] the [illegible] of Golden Rod – [illegible] in the [illegible]
[illegible] [illegible] – It was so in August and September last year – the [illegible]
[illegible]
[illegible] queen for some time – || Important ||
good plan to give comb to be [illegible] – [illegible] in a [illegible]
[illegible] clover – [illegible]
it – 5th [illegible] clear, but stormy weather – the past week has been of
greatest [illegible] for corn and sorghum – [illegible] – rather too wet for bees –
Taking not more than 16 days [illegible] – Important – I have now for some
time [illegible] the [illegible] for [illegible]
[illegible] – Splendid for [illegible] [illegible]

Black [illegible] show their [illegible] preference – always [illegible] for [illegible]

Destruction of [illegible] queen [illegible] hiving [illegible]

of what bees [illegible] In winter [illegible]

[illegible] does not [illegible] the feeling they

[illegible]  [illegible]

[illegible] of bees to [illegible] combs [illegible]

[illegible] queen [illegible]

Any unnatural arrangement of combs has a very [illegible] effect [illegible]

Breeding [illegible] combs [illegible]

[illegible] cream of cells – [illegible]

Have made successfully [illegible]

[illegible]

Triangular Comb Guide – [illegible]

[illegible]

American Bee Journal [illegible] queen [illegible]

[illegible] empty queen cups [illegible]

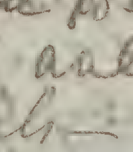
[illegible] queen [illegible]

Laws of Nucleus? Have none without brood in all stages? Is it not an unnatural condition for a stock or colony of bees in honey season to be without brood? Should not a nucleus have bees of all ages

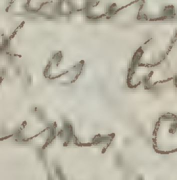
(6th) 74°: 84° — Showers — The same splendid corn weather — day and night perfect for ripening the corn — also magnificent for queen raising — To day no rain after early in A.M. — and bees got upon the red clover — No [illegible] perceive any increase of [illegible] — and yet the fields are white with the blossoms —

called the "Jewelers"
Important! Keep express boxes for holding ~~fertile queen~~ or queen cells
fertile or a queen
~~[illegible]~~ on — so as to get brood in nuclei — and yet have [illegible] queen — this of course in hot weather — **Important!** In taking away queen cells, often commit [illegible] as [illegible] [illegible] — To keep them here [illegible] or having brood of a stock without a fertile queen — they attack them first and not so easy to remove them — Put them in a small paper box and [illegible] this [illegible] [illegible] — [illegible] to [illegible] them [illegible] — A [illegible] of beautiful bees that have been [illegible] — quite [illegible] — [illegible] queen raising — [illegible] [illegible] the [illegible] — [illegible] they [illegible] sting [illegible] — [illegible] a few [illegible] or minutes [illegible] compared with [illegible] [illegible] may be [illegible] to [illegible] Blacks! [illegible] [illegible] with [illegible] queens [illegible] a [illegible] [illegible] — [illegible] [illegible] — By [illegible] to a [illegible] [illegible] [illegible] place [illegible] 7th 8th 9th — 74°: 86° — about the range, but then [illegible] weather for corn and grass — frequent showers — some days — [illegible] [illegible] [illegible] to day (9th) as many as [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] bees are getting [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] new comb — [illegible] saw [illegible] [illegible] rearing of queens — My [illegible] mangel to [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] Black [illegible] — [illegible] one [illegible] queen in [illegible] weeks. — Rearing of Queens — [illegible] and this [illegible] [illegible] of queens very much better [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] letters? [illegible] of wishes for my [illegible] letter [illegible]

ing in the section — Important Query — Both Dzierzon and myself think that we have improved the Italian bees by careful breeding — Have we not lost as much or more by close breeding as we have gained by selection? I presume that we have — [illegible] this season I refuse to lift the bees in public — Caught a just fecundated queen — had a large white mass adhering, which came off — leaving the thread like prolongation so often seen — Color of workers — Just hatched when pure have a whitish look — Black robbers swarm around me when I manipulate — dare to light on my fingers — Your time is short — you are a doomed race — I am [illegible] in favor of the original race — Very Important! How to get bees to repair or fill up holes in old combs — Often noticed how bees allow holes in old combs to remain unfilled — even when they are actively comb building — Mr R. C. Otis suggested last week that they found it very difficult to attach new comb to the old cocoons enclosing the cells — I therefore suggested paring the outer surface — Early in the A.M. I cut out a piece of worker comb [illegible] clay — Gave the [illegible] comb to a strong stock — This A.M. saw the efforts to repair at all the cut edges [illegible] — Not so perfect [illegible] the edges with smallest [illegible] — this [illegible] to my theory [illegible] they [illegible] for the cocoons! — [illegible] "Smokers [illegible] with [illegible] the [illegible]" [illegible] very important ready combs — Now in partly filling frames [illegible] the workers —



— [illegible] the edge l, l, l —



[illegible] the edge l l l —

This difficulty about the attaching will come [illegible] and be full of [illegible] [illegible] (10th) 76° .. 86° in [illegible] shade — [illegible] below 76° [illegible] above 86° = ([illegible] 14° higher) [illegible] 11th — 78° .. 80° — A good shower — Nucleus forming — Which it very convenient with my four boxes [illegible] to make four nuclei at once — Set box on stand [illegible] combs [illegible] on shelf before the [illegible] — may be left at [illegible] [illegible] in cellar — [illegible] — This the perfection of nucleus forming — Keep every [illegible] of [illegible] always in a nucleus state — that is within [illegible] of different ages [illegible]

[illegible]

ing the doubling up of these nuclei in large-sized hives—

Important thing! removing my old dirty, namely combs given in one upper story in the old to good stocks of bees—would not blame them; even the [illegible] out! This is the way of keeping old combs safe in the season—[illegible] some care to be on guard—[illegible] at any time kept the [illegible] off—but bees keep the combs sweet and clean—

Very important improvement in frames &c [illegible]—(12th) 69°. 88°—Sun hotter than any day yet—atmosphere so clear—while the bees with a free circulation of air 90°. while in my window 80°—thermometer in the [illegible] [illegible] around us—Sun stroke—Queen in a cage dead after a few minutes exposure to the sun—bees in [illegible] hives died from heat! Opening hives bees seemed almost to have [illegible]. Important Deficiencies!! From time to time I have found young queens apparently perfect in all respects, of usual laying size, well attended by bees which have not laid an egg! In Hastings Bush which came off with the [illegible] queen August 19th which I received 17 queens—[illegible] queens were put into nuclei and became [illegible] in a short time—two had every appearance of being perfect but neither laid an egg in the nuclei—Sept. [illegible] I gave them to stocks already deprived of their queens—[illegible] them from time to time—but not an egg laid—[illegible] one [illegible] full of eggs [illegible] in [illegible] [illegible]—[illegible] an egg [illegible]. [illegible] day dissected them—Each had been fecundated—Each had the fully developed ovaries of very fertile queens—one containing [illegible] containing eggs—Cannot account for their not laying in [illegible] [illegible] of instinct or [illegible] [illegible] of their [illegible]—[illegible] the dropping of eggs [illegible] [illegible] physical [illegible] might be—

Sliding forward of frames. Some that topped frames in hives in a strong [illegible] this season [illegible] slide forward so as to drop one end off the rabbet! Of course a properly constructed hive cannot do so in [illegible]—but this shows why bees are so anxious to build combs at sides (on the side of frames) when too strong a stock in [illegible]—they are aware that the frame is not secure! Color of queens—does not seem [illegible] until after fecundation—Cannot by any [illegible] [illegible] depending [illegible] [illegible] changes in drones!

[illegible] Combs—The black bees are a perfect pest in their attempts to [illegible] [illegible] me all about the opening and putting in [illegible] [illegible] bees [illegible] do this. I see [illegible] see the black bee [illegible] a thief!

which is noticed by Aristotle as only a robber — but it can't [illegible] and
jetty — but am now of opinion — that he meant to characterize the whole
race of black bees — The black bee is a thief — a very mean thief too — +
(13th) 70°.. 86° — Weather of precisely the same kind — Gave two queen cells
to a colony just deprived of laying queen — one was opened by a hole at the
side — just such a "peep hole" as I often make — & soon closed again
by the bees! Pollen a very scarce article now — My nuclei need to be
supplied with it — Bees very busy on [illegible] weed — get very little
pollen from it — Evidently a splendid bee-plant in this region in fine
[illegible] is so scarce — Some bees on Solidago — nothing [illegible] —
[illegible] get some roots of the right sort — Had a visit from Mr. Adam
Grimm of Jefferson Wisconsin — a very large and successful bee-keeper —
Some interesting facts as to duration of life in Italian workers — see [illegible] —
(14th) 70°.. 86° = Weather of same kind — Thunder storms at a distance —
Some very queer — cut queen cells — Two fertile queens in [illegible] are
now shy in laying — Shall make no more nuclei — have begun to unite
them — The want of pollen for nuclei will justify me in selling
queens from a strong stock early in the season so as [illegible]
become pollen bound — as I can later use such combs to very
great advantage — (15th) 72°.. 86° = wonderful weather! Bees again
busy where [illegible] fed beginning to [illegible] the drones — Have three
which are "ditto" — Two have young queens just [illegible] — the
other has old imported Italian queen — [illegible] commonly remove
the queens — Shall now begin to unite stocks — by giving largely the
brood from colonies which I mean to break up to those which I wish
to strengthen — leaving enough bees in all the weaker ones to serve [illegible]
nuclei! — Shall also feed say a half tumbler full of syrup to all
the stocks to be united every night — so as to engage [illegible]
possible brood-rearing — If I can get the queens to make a good
spread of brood for the present [illegible]
[illegible] my stocks in getting in [illegible]
[illegible] in the [illegible] new Italian queens — got [illegible]
[illegible] letter from [illegible] — (18th) 78°.. 84° = No change in weather — bees are working
wonderfully [illegible] on [illegible] weed — This is a great thing — Dr. [illegible] from [illegible]
Kentucky — informs me that it is very abundant in that region but he never saw a bee upon
it! [illegible] I never saw a black bee upon it — [illegible]

(17th) 68°.. 84° = At 8½ a very heavy thunder shower — rain during the night — wind
passed out North East — (18th) 67°.. — to 57° at 7½ P.M. — cloudy cool windy — bees do
nothing but bask all curled up — In a feeble nucleus saw a number of workers
with their proboscis held so that they could not when mature get out of cells! each
one held by neck of a single bee — with [illegible]! Important! All operations in
queen raising uncertain — although the weather has been up to now the
usual summer temperature and forage has not failed so as to prevent good
nuclei from properly raising their cells; (1st) A very large number of queens in good
nuclei and strong in spite of breeding failed have disappeared (2nd) A very large
number of just hatched & quite young queens given to nuclei & stocks deprived of their
queens have disappeared — some when they had no means of rearing others — & many where
they began queen cells (3rd) Many sealed queens given to nuclei have hatched & gone
yet could not be found! Did they fly off — (4th) bees have gutted many queen cells —
even when they had no means of supplying the loss — (5th) In some cases bees have opened
their own queen cells — It is thus demonstrated that even in the best seasons queen
raising ought to be pretty much got through with by September 1st — the instinct of
bees (at the north at least it may) teaches them by about Sep. 1st to curtail breeding be-
should like exceedingly to know if this is so further south — Some laying queens in
Apiaries have stopped laying — (19th) — 48°..69° = Beautiful day — wind N.E. — The heated
term has gone — but the great corn crop is safe! — This puts an entire new
face on the prospects of the country for the coming year — Rather too cool for bees — do
not think queens are impregnated — After birth the most beautiful Italian
queens lose colour and do not appear to change until after they begin to lay —
(20th) 48°..76° — Most beautiful day — warm enough for queens to mate — (21st)
60°..80° — Foggy — ~~sun partly~~ obscured most of the day — To day fed nearly
all the colonies that have enough to encourage breeding as much as possible —
(22nd) 68°..78° = Beautiful day — foggy A.M. — sun obscured most of day — bees get considerable
bee-bread — fed twice — Feeding very important to get late bred bees — which must go
out & be lost — as so many are going [illegible] — (23rd) 62°..80 — Most beautiful
day — Amounts of young brood in large stocks! Things very uncertain at this season — [illegible]
(24th) — 66°..80° — Beautiful day — cloudy near dark — (25th) 68°..78° — Splendid
day — Am feeding now twice a day — for brood those which have enough — Since
feeding the queens lay freely — hope to get many young queens — Some very
beautiful queens hatching — I think that feeding stimulates the bees wonderfully —
[illegible] to get pollen and every drop of honey they can —
~~[illegible]~~ to Unfertile Queens — Often bees almost as great [illegible] as
when [illegible] Deposited a queen of last year from a queenless stock have
[illegible] apparently by fear — she hatched a perfectly fertile queen —
Have plenty of honey in [illegible] Most [illegible] cloudy days [illegible]

as good if not better than any that seen for flight of queens and drones
A strong colony with many drones with sealed queens inclined to meddle
with them — Another with queen just laying does not — and young queen has
laid a few eggs in drone cells of worker comb empty spaced in the slats —
Rarely drawn drones — do not average much honey in groups — When a colony
goes at the drones in earnest — they make quick work — Feeding late —
All bees from eggs laid in September and later even (not flying till) be
in shape to winter — very important to feed late where so many bees are kept
in stores and houses — Time of laying after impregnation — Have seen but
in one or two instances known young queen to lay the [illegible] 36 hours after mating —
One noticed a few days ago just ready to mate — Many if not most lay after
queens when [illegible] piping "teet" — Safety of feeding with [illegible] on slats
Can feed any time of day — after feeding while [illegible] in a room & middle
of day colony tested by robbers & seem a deal quiet — Feeding when
queen raising. important if honey not gathered freely — Color of queens —
Many Italian glossy black — Unimpregnated queens kept long in cage after become
greatly changed in color for the worse — Side doors in hives — If movable tops
are used of big use — if not used must often [illegible] to get at such combs —
Robbing by Ligurians!! When hungry to be got out stealers to [illegible] [illegible]
stores or honey ~~when to be got~~ and as the bees with much [illegible] [illegible]
keep at robbing — the times of danger from robbing [illegible] [illegible]
Smoker, greatly [illegible] [illegible] [illegible] [illegible] honey — [illegible]
When at feeding in them when caged queens [illegible] [illegible]
26th — 68° .. 78° Beautiful day — To elevate outside cover so as not to
crush bees — O. P. Sheldon suggests spare pegs put in corner the corners —
Have tried them like them much — cheaper than nails — but best thing so
easily cut or broken off when no longer wanted! — Hilton's covering of royal
cell so as to see motions of queen within! — saw to day a cell from which the
cover was so removed — that the motions of queen could be plainly seen through
the cocoon! This not by any means the general rule — ~~[illegible]~~ — I am
now removing brood from colonies to be broken up — giving it to strengthen the others —
leaving only enough to get another queen if possible — Shall be very careful not to
try to have too many — Say I can get 40 good ones with [illegible] [illegible]
queens in my hives — This much better than last Sale — A colony which
failed to
queen given got rid of her and raised queens — to day found queenless — [illegible]
had no instance of colony raising queen to [illegible] [illegible]

Ligurian queen – both queens laying together – Propensity of queens to "gut" or "suck" queen cells – is it not at its height soon after birth? It seems to me as queens grow older to diminish very much – Splendid weather for corn and sorghum – Summer heat day and night still continues – (27th) 54°. 78° – but A.M. – but splendid day – many colonies have very little brood – some have been fed too fast – Queen seen moving through cocoon hatched in about two hours after first noticed – Opened a queen cell on side – gutted – but queen? Important when queen cells crowded – if one hatches remove comb with cells to another nucleus – this safer than to remove just hatched queen – Am getting some splendid young queens – (28th) 62°. 80° = Splendid summer day – Drummed out old box hive to which an Italian queen had been given – drone brood only – some hatched – beautiful ones – her wings imperfect I noticed the first [illegible] Italian stocks? Put old box in place of another colony that lost its queen and bees – this substitution so strange that robbers began to steal their honey – when it was evident that they would be robbed of all their honey in spite of their fighting – I shut up and next morning pouring water from a watering pot over the hive – this stopped the zeal of the robbers – [illegible] missing queens – sooner lost [illegible] to one or even more than earlier in the season – Still get beautiful queens – Had to day beautiful granddaughters of Ligurian queen [illegible] – (29th) 62. 78° = Splendid summer day – considerable wind – towards night began to cloud over – (30th) 60°. 66° = Heavy rain in the night – wind changed to N.E. – much cooler – splendid day – September ends most auspiciously for the farmers – Safe plan of giving queen to old box hive! Drum hive – cover with sheet so that robbers cannot get at it and put in cool place – Shake out bees near their old stand – secure queen in cage – let them stay in box till late in the P.M. – bring out old stock, put it on its stand – put caged Italian under it or between its combs – then shake out bees and let them go up – this makes all safe from robbers – Important observations!

~~August~~ October 19th. I gave to a nucleus a caged queen that had been caged August 8th – she was then some days old and may have been impregnated – (20th) Uncaged queen – (22nd) 5½ P.M. – one egg! might have been impregnated on the (20th) – 26th – On examining nucleus several days ago bees [illegible] much – queen missed – found her to day laying very freely in a stray stock near the nucleus – it had many sealed queens – she had not meddled with them – 27th. Found a very beautiful queen hatched – old one still laying – removed young queens – 28th – Removed another young queen – some queen cells sucked – 29th Laying queen dead before hive, with an immature queen – she was impregnated – Having only one young queen in hive – I am more and more inclined to think that the instinct for sucking queen cells is comparatively feeble when queens have passed a certain age –

Many of my Italian queens have nearly ceased laying – Do Italian queens cease earlier in Fall than black ones – From an extra large cell a very small queen – much jelly at bottom of the cell – Specimens – In an unfertile queen quite white – in a fertile one – yellowish or cream colored – larger than in unfertile – not so easily crushed – slides for microscope prepared –

October 1st 44°. 72° = Slight white frost in low places – A cloudy day –

(2nd) 50° 64° = Autumn day – beautiful – Some beautiful granddaughters of my Ligurians – Many young queens gone – N.B. Important!! Let queen raising be got through with mainly in August – Much matters then – depend not at all on getting queens fertile raised later than August – let weather be ever so favorable – Am now uniting stocks and reducing numbers – Am delighted with the ease with which all these operations are performed with the Italian bees – In a few minutes the bees moved from their old locations are all right – no hanging about and clustering in stupid clusters like black bees – No fighting – very rare to have any signs of fighting – and yet while they are peacefully receiving strangers they resist the robbers! Italians have much more sense as well as pluck –

[illegible] 3rd — Returned home from visit East — bringing one beautiful queen
from Dzierzon — suppose it to be from Italy as I sent for three from there —
I requested him to send more honey — fewer bees — Mr C. W. Taylor who has
opened all the previous importations thinks he sent more bees than ever
before — steamer was out 19 days — stormy passage — two colonies appeared
"all right" when blown into — one made feeble response — had not a
drop of honey and nearly all the bees were dead — queen seemed right —
but a queenless colony would not cluster on her cage — gave her to queenless
bees not very glad to get her — next day — dead — no signs of violence —
So much for German Notoriety — Both the others had 2/3rds of their bees dead —
and then more bees living than ought to have been put up — Mr Taylor
had one — I had the most beautiful, which Dzierzon regards as the most
[illegible] queen ever sent to America! — ~~(4th)~~ Gave imported queen — No (3) —
call her Ligurian No 3 — (cage [illegible] [illegible] — 6th 22°. 50° — very windy — [illegible]
queen — [illegible] — 7th 24° 48° — Splendid Indian Summer — Ligurian (3) laying — Two years ago I had
late born queens that would not lay in small nuclei — when put to good
stocks they began to lay — Have had a number do so this month — a very
good plan to test whether a young queen in a small nucleus is impregnated —
Young queens if they have a good stock seem disposed to lay when older queens
have entirely stopped — To day have been making the long winter passages — my
stocks are well off for honey — and much stronger in bees than last year — this
owing in part to feeding — Am now pushing forward the preparation of the bees
for winter — (8th) 24°. 62° — Splendid Indian Summer — Important! Ligurian bees here in all
respects more secure than black bees — seem often disposed to eat wax to be used in comb
building — my wax shaving plan which failed with black bees may answer well
with Italians — I have almost lost all confidence in any plan for artificial combs —
9th — 34° 60° — Beautiful Indian Summer — Made winter passages in ten stocks yesterday —
Important!! To winter properly — bees ought to be able to assume a globular form or cube —
an ordinary good stock would not occupy more than 8 inches square — This shape should have the
power of enlarging or contracting at once according to weather — expanding from within, out — or
contracting from without, in — This can only be effected perfectly when the bees have a free central
communication from comb to comb — In this way only can the bees that draw together [illegible] all [illegible]
the outside combs pass in — they cannot be depended on to do it by passing [illegible] [illegible]
them or on sides — the shaving hole even when not filled up [illegible] [illegible] — bees in
contracting often miss it — and perish — with the long slot they can enlarge or contract at once
occupying fewer or more combs according to weather [illegible] [illegible] — [illegible] but the three

central combs have many empty cells for them to lie in so as to condense more than if they could not get into cells – and have some well filled combs near them – and the bees will have the right conditions for wintering as far as honey and position are concerned – It should be remembered that wood is much colder than combs and that with movable frames in wooden hives there is about 2/3rds more of wooden surface for dampness to condense upon – hence the absolute necessity for a free escape of moisture – By corn cobs, old woolen garments, straw mats &c this can be secured without any risk of too much heat being carried off from the bees Mem. where there is upward ventilation the lower entrance may be almost closed – and thus no more heat need be lost than when all is close above and where ~~the~~ frost moves and dampness it is necessary to leave a considerable opening below –!!!! Very Important – Conditions of success for wintering – as regards movements of the bees – A globe or cube contracting or expanding centrally – from without inwards or from within outwards at once!!!! 9th 30°

(10th) 30..49° = Raw wind – In P.M. was able to finish cutting of winter hedges, arranging combs and uniting stocks – nearly a month later than [illegible] – Have not seen in uniting either nuclei or stocks the first sign of quarrelling this Fall! and yet no precautions at all taken to prevent it – A few colonies have hard –

(11th) 29°.. 13th – 24°..58° = Splendid day – (14th) 32°..62° = Splendid Indian Summer – (15th) 45°..60 – Splendid Indian Summer – (16th) 37°..68° = Splendid Indian Summer –

(17th) 55°.. –

(20th) 26°.50 The last week has been most beautiful Indian Summer – To day a colony with feeble queen killing it [illegible] – Queen at intervals was removed to prevent drones as late as possible – (21st) 28° 50 : Beautiful weather – Rain very much needed – streams very low – Bees evidently enjoy the long winter slots very much – (22nd) 29..4[illegible] Cloudy P.M. with raw wind and appearance of rain – Last night a beautiful Ligurian queen – large – hatched in a small nucleus – eggs first noticed on the 9th – [illegible] removed on the [illegible] See her funnel nearly every night while she was developing – these eggs cannot have been laid by 6th = (23rd) 28°..48° – Overcast most of the day – (24th) 24°..50° – Splendid Indian Summer day – perfectly clear and still – very little wind this month – very dry (25th) 28°..54 – Splendid day – (26th) 28°..56° – [illegible] weather (27th) 29°..55° – Glorious Indian Summer – almost perfectly still – rain very much needed – Even in the small nuclei the long slot winter passage enables the bees to resist these frosty nights wonderfully better than without them – would rather trust bees to winter with them without any honey board, than [illegible] be them can only be without them – (28th) 24°..43° – Cloudy – some day – A beautiful young queen reared in a quite small nucleus – Eggs first noticed on the 9th = queen removed on the 13th = (29th) 35°..[illegible] Warm – cloudy – an inch of snow fell last night – Very Important? If new swarming queens would [illegible] faster [illegible] than old ones – [illegible] swarming [illegible] the most [illegible] – After swarming has come out dispose of queen cells – and [illegible] a nearly clear it old combs be doing the [illegible] take place – so that they may not take a swarm [illegible] – [illegible] of another good stock – put bees in hive which has swarmed – and give them [illegible] to the [illegible] — (30th) 35°..42° [illegible] from small nucleus from which queen was taken up the 13th about 16½ days ago – The queen [illegible] of good size and [illegible] than [illegible]

queen cells — not fed — If I can winter over two or three will see whether in the
spring they are those less drone layers — !!! May not disposition to pair last
until queens begin to lay or are fed to lay? I have an unfertile queen
caged in a nucleus where another unfertile queen has her liberty. If she lives
till drones and is then liberated may she not pair? May not caging young
queens even for months cause them to pair when liberated — not being fed to lay?
Some rain a mere sprinkle and more wind than for a long time. December (1st) 60
27°..39° — Cold wind — but beautiful day for the beginning of winter — yesterday and
to day have perfected my long sharing winter passage and my improved plan for getting surplus
honey — ~~both~~ each as it seems to me a substantial advance in practical bee-keeping —
2nd/ 36°..63° — Strong Southerly wind — Sun red as in Indian Summer — bees flew very
briskly — 9 P.M. 50° — (3rd —) 50°..65° — 9 P.M — 64° — In A.M — Showery — Saw a
drone on the wing in colony which retained its drones so long — (4th/ 58°..48°
Showery during the night — a truly blessed rain — cisterns many all
exhausted — many wells dry — wheat beginning to perish — Wind changed
to N.W. — cloudy all day. A beautiful Ligurian queen queen born in October began
to lay in nucleus Nov 7th — Gave her to a fresh colony Nov 8th — To day found her
brood hatching and a few eggs — no unsealed larva! (5th/ 37°..39°..34° — Sour — cloudy —
N.E. wind — Exchanged two queens caging them 27 hours — well received — desired to
get an imported queen into a stronger colony (6th) 28°..35° — Cold drizzling rain —
(7th) 40°..38° — Cloudy — rain ~~(8th/ 28°~~ Good rain last night — (8th/ 28°..40° — Beautiful
day — bees flew — some — Imported exchanged queen has laid a number of eggs — (9th/ 32°..40° —
Cold drizzle in A.M — clear at sun-set — (10th/ 30°..49° — Bees flying briskly beautiful day,
(11th/ 28°..50° — Cloudy most of the day. Imported exchanged queen has eggs and larvae!
Another queen examined to day in a very much stronger stock had not an egg — This
the case with the layers in [illegible] stocks — (12th/ 48°..53°..24 — Bees flew early about [illegible]
wind changed to N.W. — strong cold wind thermometer falling rapidly — Saw more very strong stocks [illegible]
had no eggs — Put up cobs [illegible] — [illegible] (13th/ [illegible]
when closely clustering in the empty cells — to economize warmth and economy of [illegible] (14th/ 2°..12.6° — [illegible]
Cloudy this A.M — first winter day — very searching wind
[illegible] quality by winter passage [illegible] queen [illegible] — [illegible]
[illegible] all night — If they had been below zero [illegible] in cellar — If they had not the
the long winter passage they would have perished before this — (15th/ 11°..14°..5° [illegible] — some [illegible] —
My attack of jaundice has caused great delay in [illegible] — On the 13th put a thermometer [illegible]
of frames of a strong stock no honey board on — they clustered upon it and for hours did not leave it.
Notice even in this cold weather when I set cob [illegible] on the bees [illegible] a lot of frames — [illegible]
[illegible] their [illegible] [illegible] — notice a few bees all alone [illegible]
some part at the [illegible] of long passage — [illegible] — [illegible]
[illegible] every bee [illegible] — Last night [illegible] — [illegible]
quite [illegible] this A.M — [illegible] — [illegible]
[illegible] laid under [illegible] — Last night very [illegible] — [illegible] beginning
[illegible] — (16th/ 5°..27°..22° — [illegible] began to snow — In [illegible]
this A.M — noticed some curious things — Day before yesterday shut up [illegible]
of the hives not [illegible] with paper [illegible] — As the honey-boards were left off and the [illegible]
quite [illegible] with [illegible] I felt no solicitude as to their not having [illegible]
[illegible] down a top cover to put on cob-cover found lots of [illegible] dead bees
among the frames not a live bee could be seen! In [illegible] the [illegible]
[illegible] on it the Bees [illegible] —

[illegible] [illegible] it by foul air — carbonic acid gas! [illegible] Report of American
Bee-keepers Convention in American Bee-Journal — Removed bees to warm [illegible] to get
combs warmed up — [illegible] [illegible] so that bees will return to the Combs — In the
stock [illegible] one put in yesterday [illegible] [illegible] [illegible] of abundant [illegible]
[illegible] — [illegible] [illegible] many bees [illegible] a [illegible] — when I removed
[illegible] very many came out — was much excited — In both these instances the [illegible]
[illegible] [illegible] — the [illegible] into which bees first ascended was so warmed as [illegible]
[illegible] [illegible] get out of the crevices — [illegible] get at [illegible] I [illegible] them [illegible]
[illegible] bees [illegible] [illegible] [illegible] — I have been for some time [illegible] that the
bees did not lie so [illegible] in the combs as I supposed they would — but [illegible]
[illegible] [illegible] the side where the entrance was left at the [illegible] — [illegible]
[illegible] [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] affected the bees — [illegible] [illegible] [illegible]
[illegible] the entrance opening in the centre — [illegible] [illegible] very carefully [illegible]
the stocks that went into the upper [illegible] [illegible] but 1/8 as [illegible] of its bees —
[illegible] valuable knowledge [illegible] to be gained only by [illegible] —
(17th) 22°, 34° — [illegible] [illegible] — Bees flew some to day — [illegible] out the [illegible]
[illegible] [illegible] out — (18th) 33°, 35°, 40° Bees that foul air caused to go up into upper [illegible]
[illegible] [illegible] [illegible] to [illegible] out [illegible] up [illegible] — could not go back [illegible]
[illegible] [illegible] how to dislodge them — carried yesterday into dry cellar — [illegible]
[illegible] [illegible]! [illegible] [illegible] opening in centre to let foul air
[illegible] good [illegible] out — the good [illegible] must cause the [illegible] [illegible] to [illegible]
[illegible] [illegible] — Think that in this way with each comb [illegible] all [illegible] go [illegible] — [illegible]
[illegible] went into upper comb into open air again — Found three combs [illegible] in upper, [illegible]
[illegible] [illegible] square of comb — [illegible] were [illegible] [illegible]
[illegible] [illegible] with them — [illegible] up and they [illegible] [illegible]
[illegible] [illegible] [illegible] — [illegible] bees lost — [illegible] [illegible] — [illegible]
[illegible] [illegible] — [illegible] [illegible] — [illegible] gone up [illegible]
into the comb — How many dead bees [illegible] [illegible] — [illegible] [illegible]
[illegible] [illegible] outside edges of each comb — [illegible] [illegible]
[illegible] [illegible] the [illegible] of [illegible] — (19th) [illegible] cloudy — (20th) [illegible]
26°, 36°, 30° — [illegible] of [illegible] — [illegible] — [illegible] — At 9°, [illegible] 30° — [illegible]
wind — 10°, [illegible] 30° — (21st) Very windy night — 7° 14° changes are very [illegible], [illegible]
[illegible] [illegible] to avoid having two [illegible] of [illegible] [illegible] appearances — (22nd) 9°, 14°
[illegible] [illegible] to day — the [illegible] that [illegible] [illegible] combs [illegible]
[illegible] [illegible] honey — (23rd) 2°, 30° — Splendid clear winter day — [illegible] the [illegible]
[illegible] [illegible] honey [illegible] them [illegible] — [illegible] queen — [illegible] found [illegible]
[illegible] [illegible] of bees — [illegible] [illegible] honey with [illegible] [illegible]
[illegible] [illegible] of stores — (24th) 18°, 40° — Cloudy — [illegible] — (25th) 34°
[illegible] dead bees brought out — [illegible] to see so many bees dead — [illegible]
[illegible] [illegible] out — [illegible] of queen in [illegible] 20 (26th) 25° — [illegible] which [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] — [illegible]
[illegible] still [illegible] in full flight — dead brought out — [illegible] — but great thing [illegible]

[illegible] a queen of a [illegible] dead before hatching! In setting out [illegible] to day from cellar [illegible]
one on [illegible] stand — changed in a few minutes — noticed some bees [illegible]! [illegible]
by too [illegible] — It [illegible] as though the old queen was much more [illegible] than [illegible]
to be [illegible] [illegible] by these bees — (26th) 48°: 58° — Dense fog — birds singing —
like Spring — [illegible] [illegible] at [illegible] — P.M. — some rain — Bees have had a
splendid chance to clean out their hives — (27th) 35°: 42° — Cloudy — quite heavy rain
last night — (28th) 32° " 29th 23°: 35° — (30th) 23°: 36° — Splendid P.M. — bees flew a little.
(31st) 32°: 35° — Snow — a few snow flakes — January 1st — 1866 — 30°: 35° — Cloudy —
(2nd) 20° " 34° — (3rd) 19° " 36° = Splendid winter day — (4th) 12° " 18° — Clear — (5th) 4° " 22° —
6th) 14° " 45° — Clear — strong [illegible] wind — (7th) 24°: 25°: 10° — Clear — but very windy — [illegible]
(8th) 1° " 18° = Very windy last night — 9th) 2° " ~~10°~~ 14° — Clear — beautiful winter day —
(10th) 22° — (See found 7 leaves — Journal for 1868 — Continued) May 28th — Find
very little trouble in setting new style of honey boxes on strips 1/4" thick laid over
the frames and resting on [illegible] in sides of hive — bees are very easily kept out of the
way — more so than in boxes placed with usual hood bearings on the honey board — To day
put a double set of boxes on a strong stock — small ones under [illegible] ones to see how it
will work — Shall try a triple pile of small boxes on one strong stock — also the [illegible]
arrangement for small boxes on one strong stock — also boxes with shallow chamber by 1/4" strip
on one or more honey-boards — A half dozen ripe strawberries to day — Never saw good
stocks of bees so nearly exhausted of honey as this season — Colonies with 6 or [illegible]
ten frames well filled with brood until to day when opened would [illegible] up [illegible] in
nearly all their honey —! If I had fed more after the failure of the apple blossoms
[illegible] my stocks would have been still stronger — but I did not see need of it [illegible]
soon enough — With Spring stimulative feeding of flour and honey — and [illegible]
plan so as to make stocks reliant on for honey [illegible] strong — this a very good [illegible]
for honey — (29th) 64°: 72° = Slight [illegible] of rain last night — very clear at sun [illegible] —
bees getting much honey — wind sprung up with clouds — honey ceased to come in — [illegible]
[illegible] gone from the locusts! [illegible] 4 P.M. — [illegible] came back and honey came in!
Stocks [illegible] get enough to encourage breeding — If honey at last comes in abundantly
there will be a great force of bees to gather it — Before the locusts [illegible] of flowers the
good stocks ought to have parts of combs not filled with brood well filled with honey —
[illegible] [illegible] on white clover — In a number of the 13 frame hives where I have not full
complement of combs I can give empty frames with my [illegible] guides — Am convinced that bees
[illegible] more [illegible] in new combs than in old ones — Queens are more anxious to lay in them —
30th = 49° " 72° — Bees began early on Locust — clouds came up — did not work very long —
[illegible] quite [illegible] rain — bees very active on clover [illegible] — [illegible] in P.M. — [illegible] very 149
[illegible] — best day for honey since apple blossoms = Tried drones and queens with [illegible]
[illegible] around [illegible] part of body — they [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible]! held together and allowed to fly with string attached! Feel more confident that artificial
in [illegible] [illegible] by [illegible] [illegible] [illegible] queen fly [illegible] together — If [illegible] [illegible] [illegible]

a queen impregnated by tying her legs — shows that string does not prevent — suppose a band of fine elastic yarn is used? Hope that I am now on the track at last — one band might be used for one for each insect — cd have them all ready — shake them to get them into narrow place "insectart" — 31st — 53°; 76° = To day bees get more honey than they have as yet got the whole season! this perhaps too strong — June 1st — 50°; 80° = Never saw a greater day (if one as great) for honey — (Bees began at sunrise and worked as long as they could see — the number on the [illegible] board & cars in some strong stocks almost like a returning small swarm or a [illegible] — Locusts — Raspberries — White clover — Tulips = In many blooms of a tulip tree counted from 4 to 6 bees at once — they enter ~~before the flower~~ has expanded honey then on the petals in drops — seems to exude from the petals and the bees seem to be on hand to lick it up as fast as it exudes — Tried to [illegible] to see how it [illegible] laying queen and drone could not get them to fly much — suppose tye them and let them fly in a room without a string to confine them? Saw a large mass of drones crowded out of a hive yesterday — and yet honey so plenty — ! they had begun to kill them before it was plenty — 2nd — 60°; 96° = Thunder last night — a little rain — Bees working well before this A.M. until it clouded over for rain — Rain began to fall at 11 A.M. — In a short time 1 3/10ths inches fell — a glorious rain — a blessed gift of God — for all the crops — for the bees — gives the clover a splendid chance — fields are getting very white with clover — cleared up warm till P.M. — but not [illegible] ready bees — by sun-set Locusts began to [illegible] [illegible] — thus far this season have been uncommonly successful in [illegible] queens to replace those sold — Almost every just [illegible] queen has been accepted queen at once after removing the [illegible] 3rd — very hot — sun clouded much of the day — very good day for honey — but not so astonishing as some past days — Saw many stolen bees [illegible] along to get honey from it — [illegible] [illegible] honey abundant — [illegible] [illegible] for extracting [illegible] — that all [illegible] [illegible] on the [illegible] of [illegible] — [illegible] — an unexpected amount of honey on the outside — then the empty frames with their ~~[illegible]~~ wax guides — Am satisfied that this works much better than to put empty frames between full ones — It imitates the natural proceedings of the bees (new swarms — or stocks with hives only partially filled from previous year) in comb building — Italian bees do seem to me more inclined than black ones to building drone comb — Stocks or colonies with young queens will build much drone comb — It will be necessary in the Spring to remove this and this is the best way to do it — Where one half more or less of the comb are drone — cut — and fasten all drone in one and all worker in the other! Important this = Such drone combs to be used for storage of honey in supers or put on outside where queen will not use it — may be used later in season to be filled with honey when bees would no longer work in boxes — try to keep new drone comb in one frame and old in one frame — the old can then be emptied by the machine =

6th/60.. Sun very hot — clouded some — Breeze mostly gone from ~~[illegible]~~ and bees fed them — altho' many [illegible] in a [illegible] state for age — Has been an admirable day for white clover honey — Several [illegible] [illegible] — much more common this season than for any four or five years — One swarm one found on tree — when shaken on sheet before hive — clinging ~~[illegible]~~ for some distance — but made for the woods! Some of the best ~~[illegible]~~ — Bees beginning to lie some in small trees — expect them in a few days to begin comb building in them — Important = The condensing plan will probably cause many of the stocks to throw very large and [illegible] the swarms — so much the better — for it seems to me that in this way more honey can be got than if they did not swarm! Eggs and chickens both!! I have for some years been of opinion that good natural swarms will do far more work than the same force in other swarms or in artificial colonies — By giving the new swarm say ~~five~~ six of the 12 frames and the boxes they will probably work as well if not better in the boxes than if they had not swarmed — and by giving the rest of the combs with the bees that stay behind to a new [illegible] with ~~young~~ fertile queen they will make a very good stock —
~~[illegible]~~ 3 [illegible]

November 26th 1800 — Nov. 4th — My Egyptian Queen imported by J. T. Woodbury [illegible] Angel came by Steamer City of Paris from Liverpool — Mr Woodbury of Exeter England had put her up most admirably in a [illegible] Woodbury [illegible] hive — Did not get them late the 12th — Was sent to Public Warehouse in N. Y. [illegible] Again at Brooklyn — found them in splendid order — queen all right [illegible] Did not [illegible] again to take the queen — late 9th — Now in [illegible] had been allowed to fly [illegible] — Queen gone! Got a splendid queen [illegible] taken from a fine stock and given to a [illegible] for the purpose of getting [illegible] for [illegible] Egyptian — Bitter disappointment Hope it will do me good — Nov. 12 — 3 Egyptian and one Italian queen came in steamer [illegible] from [illegible] — [illegible] with [illegible] 13th to let them fly — Italian queen dead — only a few bees (scarcely) alive — [illegible] in new comb and [illegible] Opening next day Egyptian queen [illegible] dead and [illegible] bees living — [illegible] — got all right — too cold for bees to fly and [illegible] 15th — Opened them again at [illegible] — had to give them new bees — Caged the queens — [illegible] at Oxford [illegible] living — Too much [illegible] to [illegible] ought to have kept them with natives — and to have [illegible] in 48 hours [illegible] to get them — [illegible] of them caged — [illegible] one dead in cage [illegible] to be [illegible] [illegible] is [illegible] [illegible] one dead Egyptian to [illegible] my time, trouble and money [illegible] Egyptian Queen, [illegible] [illegible] [illegible] [illegible] [illegible] 29th [illegible] [illegible] [illegible] not like the spaces left between tops of frames & the cols —

Dec. 6th —) Have had a few splendid Indian Summer days — bees are put into winter arrangements — To day made some very valuable improvements in my hive — See Vol. 2. Ri — I seem sure to secure advantages very great for very little additional expense — Dec. 10th — 14°.. 18° = Cloudy — very windy — (11th) 11°.. In hives with old pieces of carpet put on frames bees have been [illegible] up to carpet — put on cotton [illegible] [illegible] on carpet; showing that dampness [illegible] through carpet [illegible] [illegible] [illegible] — it may be [illegible] to [illegible] bottom board all of carpet — (22nd) Weather has been cold for the season — as low as 8° — but few dead bees as yet on bottom board — am better pleased with carpet arrangement than anything yet used — For what I have lately done to improve hive see — [illegible] Vol. 2 — Page giving as simple a plan for raising frames above bottom board by get rid of any objection to movable bottom board — Having [illegible] to elevate frames or mat & I place [illegible] it [illegible] [illegible] [illegible] bottom board [illegible] only above bottom board? [illegible] [illegible] [illegible] bees can reach it from bottom board — Dec. 27th 6°. 12° 4° [illegible] [illegible] [illegible] rain 60° — with some thunder — since then variable with some [illegible] — Weather has been very cold at the East — (28th) 4°.. 16° = Beautiful clear day — dampness comes up through double thickness of carpet, and [illegible] paper are covered in frost — (29th) 4°.. 20° = Some overclouded — not much wind — heard of thunderstorms at the North and East — (30th) — 5°.. 18°. Steady — Tops of hives full of frost — carpet with cut [illegible] [illegible] [illegible] — Inside of hive with wide topped frames full of frost — even although much has escaped up from back space and [illegible] space made by the pattern for frames to rest on — Have devised (see after Dec) better plan for ventilating in open air. Easy to see how hives with hard topped frames must be bad in cold regions [illegible] [illegible] — no escape for dampness — does not [illegible] [illegible] day as in single box — (31st) 10°.. 25° = Overcast — Jan 1st 1857 = 14°.. 22° Beautiful bright clear winter day — (2nd) — 2°.. 22° = Splendid bright, clear day — [illegible] frost in back of hive — [illegible] frame) — Bees in [illegible] [illegible] as in Gimet — where no ice can form — not so badly off as in close shut hives where frost or dampness can form and prevent them moving freely to get food. (3rd) 0°.. 30° = Bright — calm — bees flew considerably — [illegible] of black bees flew more than Italians — Have never been able to see the superior hardihood as to cold of Italians — (4th) 10°.. 40° — Steady, [illegible] clouded [illegible] — [illegible] colony of black bees [illegible] [illegible] yesterday — Italian queen [illegible] [illegible] [illegible] already! Bees in full colonies flew [illegible] at all to day — Removed [illegible] [illegible] for cutting [illegible] [illegible] [illegible] — [illegible] with [illegible] [illegible] — added [illegible] to [illegible] [illegible] for the [illegible] [illegible] [illegible] — [illegible] [illegible] covered with carpet — [illegible]

(5th) [illegible] in [illegible] [illegible] containing [illegible] [illegible] and placed in my cellar [illegible] the way to [illegible] [illegible] [illegible] a good [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] feathers [illegible] a [illegible] [illegible] [illegible] carpet [illegible] [illegible] [illegible] under carpet – ray carpet [illegible] cotton – under carpet dry! ray carpet quite damp [illegible] [illegible] [illegible] [illegible]! [illegible] [illegible] [illegible] ago on left side [illegible] to day [illegible] [illegible] [illegible] to right side [illegible] [illegible] side! [illegible] [illegible] [illegible] [illegible] [illegible] in heating [illegible] [illegible] [illegible] [illegible] – No certainty as to time winter heating begins =

(6th) 35° .. rain – sleet – snow (6th) 21° ~~22°~~ ~~24°~~ .. 32° – clear (7th) 14° .. 32° [illegible] day – (8th) 25° .. Some snow last night – cloudy to day (9th) 21° .. 34° – variable –

(10th) 20° .. 24° Some snow [illegible] – (11th) 12° .. 24° [illegible] clear [illegible]

(12th) 12° .. 26° – Snow [illegible] – [illegible] 22° Rain! [illegible] – (13th) [illegible] .. 41° [illegible] – (14th) .. 34° – Snow last night [illegible] – (15th) 28 .. 25° [illegible] cloudy [illegible] (16th) 16° .. 18° [illegible] snow with wind [illegible] [illegible] [illegible] (17th) – 6 .. [illegible]° – clear [illegible] [illegible] ~~[illegible]~~ 10° .. 0° = coldest day [illegible] – (18th) + 3° .. 10° – cloudy (19th) 4° .. 22° [illegible] cloudy – (20th) 18° .. 22° – Snow last night [illegible] (21st) 10° .. 20° – clear [illegible] [illegible] cloudy

[illegible] 1858 – [illegible] [illegible] [illegible]

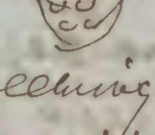
[illegible]

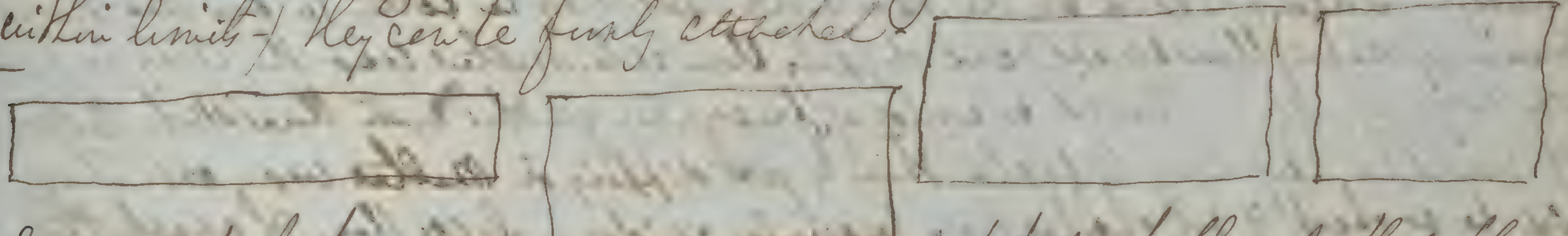
[illegible] sweet! [illegible] [illegible] [illegible] by dipping clean [illegible] [illegible] [illegible] back of [illegible] by opening [illegible] [illegible] [illegible] [illegible] with [illegible]

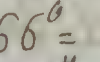
[illegible]

[illegible] with honey [illegible] [illegible] [illegible] [illegible] [illegible] feeding and water [illegible] [illegible]

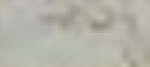
[illegible] the time [illegible] [illegible] [illegible] – [illegible] last week [illegible]

[illegible] of the [illegible] [illegible] [illegible] [illegible] [illegible] – March 16th [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] yesterday 70° – 2 day 60° [illegible] [illegible] [illegible] [illegible] [illegible] first pollen — To day gave a good nucleus an empty frame between their hive with three of my wax plate foundations — fed them — In a few hours found the center one — the largest — well advanced — Thus  — the upper section with no cells sketched in it — the lower part with cells well advanced! the other guides just starting — This mode of securing straight combs more promising than any other yet devised — and if they can be made say two or three inches long and one deep — or longer and deeper we should not only have the [illegible] of the bees leaving the thin irregular edge avoided but we could utilize wax most admirably — However broad and deep (within limits) they can be firmly attached

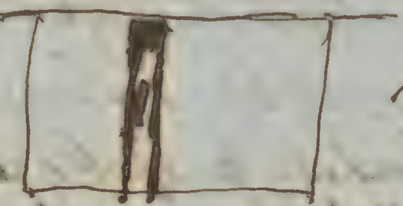


Care must be taken not to make them so that the bees will build the combs wavy — A few experiments in large stocks will develop the proper limits as to size &c — March 19th — The bees have sketched out cells in the middle part — To get thin plates of wax warm up the wax in hot water — roll it out — If small  crescent shaped plates are found best — (the bees perhaps spending more time in working out the larger ones than is gained by size) might they not be punched out with a punch which would punch half a dozen at one blow? Thermometer 60°.. 66° = Heavy rain last night — Wonderful growth of wheat and grass the last few days — 18th = 35°.. 50° — Splendid day — Bees in A.M. very greedy for flour — In P.M. brought in much pollen — honey or sugar tree sap — As soon as comb building begins quite freely — ought to remove poor combs into supers and encourage it below — By inexpert queen raising for sale — and few new colonies my combs have many of them become very poor — such comb much more liable to side attachments by bees — (19th) .. 50° — Rain in A.M. — Am giving all the colonies some sweetened water or very thin honey water — not as stimulus — they expect it — Too cool for bees to get pollen — take the flour greedily — 20th: 36°.. 42° — Windy — very raw — a decided cold clear up — in intervals of sunshine a few bees in flour boxes — 21st 25°.. 34° — Freezing very cold in A.M. — P.M. sun came out — and bees active in the flour boxes — Queens do not yet lay in drone combs — cannot anticipate the season — 22d — 25°.. 50° — Bees get no pollen — greedy for flour — 23d — 36°.. 69° — Bees getting pollen very largely — and thin honey — saw queen just laying in drone comb! Gave my wax guides to a nucleus and a full stock — in two hours cells sketched — 24th — 57°.. 50° — Thunder and heavy showers last night — [illegible] [illegible] very well — I will stick here & there [illegible] on two or more places besides the three wax foundations — Make them smaller — are more of them? (25th) 50°.. 42° — N.E. — heavy rain during the day — thunder — not a bee out — Dry corn cobs needed for an apron or alighting board — (26th) — 33°.. 38° — Strong N.E. wind — rain — very raw day —

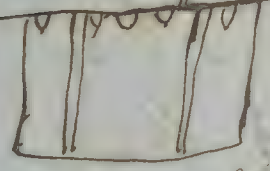
Bees fed twice — If I had been home should have fed them [illegible] more liberally
to be sure and prevent check to breeding - especially of drones — Such weather calls for great
judgement on the part of the bee-keeper — Heavy frosts — probably snow further North —
(27th) 36°.. 46° — Much rain last night — drizzly during day — at one time a few
bees on the wing — Fed them warm sugar syrup twice — Uncommon N. E. storm —
Snow North — Egyptian Queen seems to be laying drone eggs mostly — have given
her a frame of hatching brood to give her young bees and more bees — Fear that this
long cold spell has checked breeding in spite of feeding — (28th) 40°.. 46° — Wind still
N. E. — spits of rain — clouds broke away some before sun-set — Colony to which
you may wax guides were given in a large frame have followed them ad-
mirably — Queen has laid in the new comb — It may be better to use more than
three — by making them small and dipping them into melted wax they may be put
on very rapidly — Would a union of triangular guide with these work better —
It would be very easy to fasten them by just dipping in melted wax — and they
would be as cheap if not cheaper than triangular guides — Call them — Langstroth's
wax-comb guides. Have fed bees twice to day with thin syrup — saw eggs
laid in some cells since this long cold storm began — It is more like a
~~genuine~~ New England North Easter than anything I have known since I came
out West — 29th — 36°.. 60° — Splendid clear-up day — Wind still N. E.! It has
"stormed out." Bees bring much pollen — some honey — 30th — 36°.. 62° — Splendid
day — Wind N. W. — a week of N. E. — By feeding bees have been breeding well — queens laying
drone eggs — A strong colony had 3 S. W. Guides {Langstroth Wax Comb Guides they
used them and made two other starters — There were drone-eggs in them — to day find
two of the drones changed (as they enlarge them) into worker cells — an astonishing [illegible]
of fruit blossoms — Never saw in this latitude peach trees so full of blossom buds — (31) 35°
Perfect day — inspecting combs & many others — have only a very few black bees — left in stocks
not yet changed by Italian Queens — and yet ~~9/10~~ 9/10ths of all the others were black bees —
Wax Guides just moulded with the fingers and set on in place of [illegible] admirably —
much better than thin plates — so easy to work by the bees! How true that
simplicity is the best thing often reached — The triangular edge enables us to
set these guides much better — see where to put them — and have a place to squeeze
them to attach them — No doubt the guiding edge and wax guides make
together a better thing than either alone — April 1st. 42°.. 70° & Windy — bees get
but little — Put on Langstroth Guides in the house — There was fire and [illegible]
little warm. 2nd — 25° Wind changed to N. W. — grew cold fast — fixed Dr Hills bees — saw how
black queens spread their brood — His bees have not been stimulated much
compared with mine — these stock out before have [illegible] — got back
to hive by aid of [illegible] — [illegible] to [illegible] [illegible]

3d – 25°.. 50° – [illegible] wind changed to S. W. – bees flew not much windy – fed
twice – they took feed again – By feeding they are kept up to the mark
and do not feel much the changes, – Eggs laid in drone comb – Received
my dollar there from Hamilton – Am much delighted with the
flour – Am now strongly persuaded that my hive will winter bees
in the open air in Minnesota – and that it has been brought to
a completeness far in advance of any one yet made – 4th 30°..
45°.. 24° = very strong wind – 3 P.M. clouded – a spit of rain – wind passed to N. W.
blew very strong – At 11 P.M. – clouds in the light of moon heaped up like masses of
snow or wool – blue almost black looked wonderfully distinct – seemed as though
there were immense depths between clouds and place – never saw the
line of demarcation so distinct – 12 P.M. – 24° = (5th) 3 A.M. – 18° – 6 A.M.
18° = highest 38° = Fruit buds nearly expanded – peach in sight – them
white like snow! A freeze but a very dry one – buds of fruit trees
appear uninjured – ice in water trough unfrozen all day – Sweet
scented white violets frozen! Must further South must have suffered
(I fear) very much – South – must have been very cold – expect to learn
of great snow storms – At sunset clouds had a soft look – as though
the next day wind would pass to the South – (6th) 22°.. 48°.. 36° – Wind
S. E. – softened so that at noon bees flew well – began to cloud over with raw wind –
Bees greedy again at flour boxes – too cool to gather pollen if frost has not
destroyed it – Sweet scented violets frozen – Keep feeding a mixture of rye flour
paste and honey – to prevent check to breeding – bees devour it greedily – Have
two stocks queenless – both had queens laying when last examined – in one no hatched
~~em~~ the other much brood – and 5 sealed queens – At sunset began to snow and snow –
(7th) 34°.. – Ground entirely hidden with snow – wind N. E. – Quite a number
of drones have hatched from the brood of my mismated Egyptian Queen – She lays
very few eggs – and I fear that most if not all of them are drone eggs – Have now
a number of queen cells under way – and shall form nuclei as soon as the weather
softens – Am but ready to try my plan of artificial impregnation – Hope for success –
8 P.M. – Strong S. W. wind – bees out some in flour boxes – 9th 28°.. 26.. 30°. Strong N. E.
wind – began to snow at 6 A.M. – has snowed all day – almost a gale – 11 P.M. 27° = ~~18~~
(10th) 1 A.M. = Wax Guides – triangular edges may be
dipped into melted wax so as to form thin wax edge below wood edge! drops of
wax cooling make starters!  – Use scraps of comb to keep wax soft and
pinch it on – heat of sun – and pinch it on – can do this any moment – this prettily keeps

(16th) On board the cars from Cincinnati to Hamilton an idea for improving frames or bars occurred to me— Get inch linden board—with saw cut or any better way pieces say 1/16" thick



make pieces like clothes pins only have below upper part—which should be at least one inch long—so that the nails from upper part of frame will hold in it—let lower part lap over against bottom rail of frame and be sprigged to it—now without any extra pieces you have the frame very stiff— ~~Better~~ perhaps—let these thin pieces be sprigged to upper as well as lower rail— Hive 2 w(8) = 20 1/4 50° = N.E. .. —yesterday A.M.—before day rain—42°—Grew warmer—by noon bees flew and brought in some pollen— Weather and condition of bees have been very remarkable— Before the stormy weather began bees were unusually frugal—had taken flour so freely that I did not give them all they would have taken for fear of their invading their cells— When the stormy weather prevented them from going out I began feeding twice a day the flour syrup of the Germans—hoping to secure a large spread of brood— This was fed twice a day—and seemed to be greedily devoured— I left home on the 11th—was absent till the 18th— Gave directions to have flour syrup continued— On my return saw a small piece of comb on the ground covered with bees eating out the bee-bread! Never saw the like— on opening hives found but a small amount of unsealed larvae!— Bees had been suffering for want of pollen and water— The two days previous to my return they had got some pollen and then queens were laying eggs quite freely— In many hives the brood hatching had been suspended— Exposed flour in the trees—greedily devoured!— 17 and 18th windy and unpleasant—but bees took large amounts of flour— Yesterday although they got some pollen they seemed almost crazy after the flour— the cold and cloudy weather has pretty much used up the pollen and flour stored and [illegible]— Bees flew considerably in P.M.—cherries and peaches beginning to blossom— Rain in P.M.— A great laying of eggs since flour feeding has been resumed—(21st) 43° .. Magnificent day— Peaches &c beginning to bloom—22nd—40°.. Perfect day—peaches, plums, and cherries in full bloom— Bees have evidently suffered for want of pollen — few bees hatching — Seeing that there was so great falling off in breeding — hives very full of brood — P.M. — Wind changed to N.E. — cold — bees in P.M. did nothing — fed for stimulus — Examined comb building in new style of frame — pleased me better than anything I have yet seen — Here L. N. G. seem best — (24th) 36°.. — Towards noon grew



pleasant and bees flew beautifully — gathering much honey and pollen — Made nuclei — stop up with [illegible] — do not need to put into cellar — Shall make a large number while fruit trees in blossom — (25th) 42° — Variable P.M. wind changed to N.E. — and at dark began to rain — cold and raw this A.M. — So long as bees get pollen enough and I stimulate on such days by a little feeding, delaying weather all the better — combs filling with brood — Sugar maple in full blossom — P.M. rained heavily during the day — fed them syrup — 26th — 40°.. 60°. N.E. — Splendid day — bees very active on fruit blossoms — pears in blossom — (27th) 40°.. 70° — Splendid day — made many nuclei much honey gathered — bees very strong — drones abundant — Tried injecting semen — tube too [illegible] — Shall make it larger with rubber bladder adjusted to syringe so as to get more pressure — Comb building well — (28th) Warm honey weather until P.M. — Rain in P.M. — made nuclei (see B (1) without trouble from their honey — (29th) 58°.. — 72° — Splendid day for bees — wind enough to prevent them from getting too much honey — made nuclei — Sugar maples have blossomed freely — about the same time with peach and cherry — 30th — 54°.. 72° — Windy as yesterday — Queen laying drone eggs — In a very strong colony from which I had removed all drone comb except two which had say 1/4 drone comb at the back side — queen had put drone eggs in those cells along she had to leave the brood to do it! In the last comb no eggs in the worker cells although the drones are nearly ready to seal over — A demonstration that the instinct of the queen teaches her when to lay drone eggs and when not —

May 1st Warm — 56°.. 78° — Bees very active late in P.M. on apple blossoms — fragrance powerful — At dusk thunder shower — showery with thunder all night — (2nd) Warm & very rainy in A.M. — wind changed to N.E. — cleared up in the P.M. — an inch of rain fell since last night — (3rd) 70° — Bees get considerable from apple blossoms — in full blossoms — also dandelions — which are coming into blossom — Never saw better weather for bees — enough not too much — (4th) 60°. Have made 33 nuclei — many [illegible] queens have hatched — Make nuclei to keep out of doors — [illegible] them — at dusk [illegible] (cheap) shut [illegible] next day — feed — Keep shut three or four days — Shall have a large [illegible] to set nuclei hives on — to shade each one — [illegible] if needed —

(5th) " 78° — An inch of rain fell — yesterday — Laid the last tile in my drain in a heavy shower — part of ditch already dug — if not laid the whole ditch wd have filled with water — caved in &c — Towards 6 P.M. — bees began to get much honey from apple tree blossoms — (6th) Close — sultry — bees working sharply on apple blossoms — 10 A.M. — heavy rain — In P.M. — bees again working sharply on blossoms — About 8 P.M. — tremendous rain — part of my dam gave way — never saw more surface water — (7th) 2 2/5 inches of rain fell in the last 24 hours — tornadoes, freshets, hurricanes &c — Wind N.E. — cold — bees stir but little — 8th — 39°. — Beautiful day — but cool — bees work well — too cool for impregnation of queens — (9th) 40°, 64°. Beautiful day — Our bees are now in splendid condition — Stimulative feeding all important where spring forage so abundant — Bees have got from the fruit blossoms only enough for immediate use — Thus be ready mass of them to enter boxes when Locust blossoms — this the point to be gained in this location — Too cool for queen to mate — (10th) 50°, 64°. Rain to-day — wind S.E. — P.M. — sun came out — late in P.M. of to-day and yesterday bees got considerable honey — Buckeye in full blossom — apple trees nearly out of blossom — weather has prevented bees from getting much honey from fruit blossoms — enough got to keep them in the best condition — rapidly extending their brood — (11th) — Bees get some honey — pleasant — 65° — One queen impregnated! (12th) — About 10 A.M. — began to rain — wind N.E. — bees quiet — rained quietly all day — high wind after dark — (12th) 50° " — Steady rain last night — Have an Egyptian queen which has become a drone layer — very foolish — got drones from her — Shall try to impregnate some of them from Egyptian drones — others from Italian drones from which I raise some Italian queens from those impregnated from Egyptian so as to get back to pure bees — this would be as Malpighius says "[illegible] felicitas expandida" — One inch of rain has fallen in the last 20 hours — cold — steady N.E. — Fed all the stocks to encourage — (13th) 49°. 52° — Yesterday cleared the plan for impregnating queens

by injection – Put a rubber bag on the glass tube to get sufficient power – (49)
Pull drone to pieces – get his seminal receptacle into fine mouth of tube –
open vulva of queen – inject it! – Apprehend no trouble except in opening vulva –
Will impregnate some eggs of my drone laying Egyptian queen (just dropped – she
is now very fertile) with Egyptian semen – have piece of glass over warm or
rather hot water to keep the diluted semen warm – put eggs in cells and
give them to colony eager especially to raise queens – impregnate some in the
semen of Italian – some of Italian drones! This also if successful – Mirabilia
felicitas experiendi! (14th) 50°.. 56° – Yesterday wind N. W. – Some day – drizzle
at intervals – fed bees – To day at P.M. sun almost clear – some fair sky –
bees get bee-bread and some honey – Stocks getting very light in honey – (15th
53°.. – 16th 53°.. 66° – Slight showers in P.M. – bees get honey – stocks
almost out of honey – fed – Heard of black bees butchering their drones –
17th – 60° – Pleasant – bees get some honey – 18th 46°.. 64° – Pleasant – bees get but
little honey – wind N. E. – Buckeye main supply – Many colonies must be
fed – old honey nearly all used up in the stocks – From first blossoms they have
got so little as to seal new none! Prospects of honey harvest very favorable – Swarms
will then be late – stocks stronger and less likely to have them injured by unfavorable
weather – Wet and cold have caused an unusual development of the white clover – If bees
not fed they must nearly starve (feeling many of them – and some would die – I have
now feed twice a day – unless honey comes in more freely – (19th) 40°.. 62° – Frost in
low places – Wind still N. E. – but little honey got – A number of young queens were
impregnated to day – saw a number caressed by their own bees – Query whether
they are not caressed when bees have not the care of unsealed brood? Note to test this –
Have known a strong swarm with y. Queen to caress her day after day till the hive
was nearly filled with worker combs –! Found a dead Italian y. Q. in nucleus with
my Egyptian Queen (drone layer now) – Dear E. queen gone – but have many drones – they hatched
in Aug or more hours less than 24 days – (20th) 43°.. 62° N. E. – Pleasant – some queens
impregnated – Queen has laid in less than 36 hours after impregnation – Impreg 2 P.M. – laying
[illegible] 5 A.M. next A.M. – between (21st) 46°.. 69° – N – Beautiful day – bees in fine
[illegible] – Drones very handsome from queen whose drones last year were [illegible]
that would have prevented bees from getting much from first blossoms – Many
[illegible] almost out of honey – many have entire scarcity – am feeding to carry
[illegible] sent to [illegible] blossoms – Buckeye yields [illegible]

and more honey – State has blossoms – very important to bees here – Raspberry beginning
to blossom – Queen sent by Mr Cary (Egyptian impregnated by Italian drone) came by mail
all her bees dead – Smeared – She very lively – Laying very well – (22nd) – 80° – Fed
all the stocks twice – drones in full flight – Raspberry in blossom – Black eye
State yields some honey – (23rd) 49° – Very gloomy weather – bees get more honey – did
not feed to day – Small and poorly developed queens slow to get fertile – many
of them lost – far larger proportion than of well developed queens – (24th) 52°, 74°
Beautiful day – drones in full flight – Honey got in small quantities – (25th) 51°, [illegible]
Very hot – Bees have next to no honey – but hives are very populous – and
just the right state to do big work if honey is abundant – Am now setting
on my new style of boxes – without any honey board – am much pleased with the
plan – bees enter them very readily – (26th) 52°, 80° – Locusts in warm spots
beginning to show blossoms – Tulip trees just blossoming – White clover in warm
spots begins to blossom – Important plan for getting largest yield
of surplus honey where it comes "with a rush" – Say 50 hives in an
apiary – Just before the great honey harvest – if any are not well
packed up with bees and brood, transfer combs full of brood from
one hive to another – exchanging the empty combs into the one robbed of
its brood – Do this steadily even if one half of the stocks are left
exceedingly weak – The strong ones filled with brood having them [illegible]
be all right must go into them in great force as soon as honey
comes in – [illegible] one thus made extra strong more honey will be
got than from two or three only moderately strong – Later after
honey harvest is over the colonies may be equalized if needed –
If these strong stocks swarm – hive them temporarily in box – remove say one
third to one half of the brood combs with all the bees to new swarm – and
give old stock a fertile young queen – so that they will not build drone
comb – The new swarms will then go right on working in the boxes
[illegible] 13 frames best for such a plan – (27th) 60°, [illegible]° – Last night very
[illegible] with thunder – 1/2" rain – a truly blessed rain for the crops – In the A.M.
bees got some honey – towards noon began to rain – rained considerably in the P.M.
28th, 60°, 80° – A glorious day – bees very active – Towards evening Locusts [illegible]
[illegible] – Important. [illegible] having [illegible] or [illegible]
[illegible] out [illegible] bees [illegible]

7-12 See 2137

Art. Impregnation of queen — Dec 27 1860 — Received to day a letter from my friend Dr Edward [illegible] of [illegible] relating to the artificial impregnation of Queen — Dec 24th 1860 — I have thought that it might be possible to impregnate the eggs of a drone laying queen or even fertilize a virgin queen by injecting the sperm of the male through a very small tube such as are used in microscopical investigations which are less in diameter than the base of the penis of the drone. Eggs laid immediately after might be impregnated which could be tested within 21 days. If this could be done it would be a great advantage. It has been tried with the drone so I am inclined to think that with the bee it is only a question of time, if I can I will give this problem a fair trial [illegible] My present idea of operating is to [illegible] the penis [illegible]

[illegible]

(2 i) Impregnation of Queens – See results other side of this sheet –
drones to mate – that have been confined for some days – or better let the nuclei be properly accustomed to the place – keep in a warm ... which it is pleasant to have queens and drones – then ... in warm certain – so as to have queen and drones on the wing together Obs. by (see Bee Journal 1861) experiments show that they come to mate near the hive – If a regular course of feeding and ... ... certain to protect – ... ... accustomed to the obstruction as not to be too greatly disconcerted by it. This plan properly developed seems to me the most feasible of any yet suggested. A large number of nuclei might easily be kept in a suitable room – and so disposed at different heights and positions, nuclei boxes of different colors &c – If a plan of this kind could be made to succeed how much might be gained.

[illegible]

[illegible]

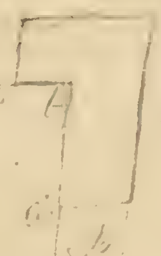
[illegible] March 11th – Mr. Hill – Dr. Hamlin double sides of hive from the outside by fastening strips to legs of hive and side ledges and filling in with straw – the air space thus obtained – This an excellent idea and used in connection with inside plan would be all the better – 12th – To protect the bottom board – In preparing hives for wintering bees, place upon the bottom board (under it on outside) straw and keep it in place in any suitable way – Would prefer this only in the very coldest climates – In very cold dry latitudes like Minnesota – the straw might be filled up under hive as supported by legs – or the side boards fastened ... whole air space might extend to bottom of legs – Fill in under hive – set board back of hive – and with apron or alighting board straw under hive is well protected. Or – let boards fastened to legs extend say two inches only below legs – and project behind so as with another board fastened to their edges ends you enclose also the rear of the hive – Fill in between rear board and this board with straw &c – In the space below level of bottom board – pack straw which can now be easily secured in place – and yet not come to the ground to be wet &c – If desirable the portico may be enclosed the same way – a single strip being laid upon the alighting board kept high enough by little tacks to allow bees to pass under whole length of entrance and yet exclude mice – Such an arrangement is not for the free escape of moisture as one would make a hive very damp. With such an arrangement bees could be wintered well without too great consumption of ... ... in our country – and at much less expense than in any expensive winter depository – Would there be any special objection to having the straw pass under and below all season? Easy to let side boards frame for rear board –

Purpose of Hot Drones – If not done with ... the queens, it would be a great gain if we could succeed with the plan which we intend to raise our queens to Italianize our apiaries – The Italians would succeed in laying the eggs of queens –

(March 1st 1862) Have one or more dozen [illegible] queens in the Fall – to winter in [illegible] stocks – These [illegible] [illegible] [illegible] the strength of these stocks [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] before [illegible] [illegible] [illegible] See pp 113 114 [illegible] [illegible] – this is very good [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible]

5/8"



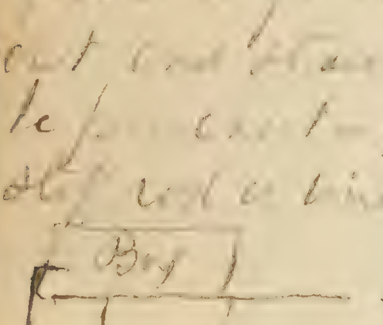
[illegible] bottom board – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ought to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] filled with [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] keep all warm [illegible] [illegible] [illegible] 7/8" [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to give 1½ [illegible] [illegible] [illegible] in Summer [illegible] [illegible] [illegible] [illegible] taken out in Summer [illegible] [illegible] [illegible] In my own apiary [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

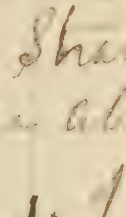
Sales of Italian queens made by me as agent for Mr Parsons— 1861—

May 24th — One queen to Prof J. P. Kirtland, Cleveland, Ohio — $10,00

April 27, 1863 — Let top of hive have grooves — to let in pieces say 3/8" thick — first piece go down to 1/2" of bottom board — have a strong head or staple next front to keep top from bottom board — 2" wide — second piece kept in same way 3/8" from 1st — third from 2nd — fourth from 3rd and just wide enough to come up to the proper level for support of frames — its top edge may be made [illegible] rounded off to say 1/8" to diminish danger of pinching. Frames may be close fitted on their tops — so that at front the pieces [illegible] just project 1/4" — the slight but 3/8 from front to rear of hive the bees can not get into boxes placed over the 3/8 between the ends of tops and case, without the tops being [illegible] so [illegible] separated from each other — they need not travel between combs — but and also unless there is very good attraction — it would be almost impossible to get the queen to go into honey boxes — In winter all but the strip might be taken out and straw mats put in — or if only the strip left, then mats might bring to be pressed — Straw mats might be put in boxes front and rear [illegible] strip rest or wire above to support frames — (June 8th) Might not the tops of the frames rest upon strips so as to give a smaller bearing — making the bees to hop under — about 3/8 inch to prevent cementing — There will be danger of too much rocking — (13th) The same slotted arrangement might be used on the sides as well as front and rear — or on sides and not front and rear, with openings in boxes to let bees in. Or use two slotted dividers — one at each side — made on same plan with Guide Frames — Bees of these are made thin [illegible] between them and sides of the hive into the boxes — these must about 1/2 inch from sides — and middle — or may be made so that the two will take up the room of one frame only — Guides may be slightly elevated so as to [illegible] best support frames — Holes may be made in [illegible] (See He) to let bees into boxes from front and rear edge — The slots may not be so deep but then they must [illegible]

See He —
New hive —





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if he should not be ~~[illegible]~~ [illegible] to an edge — but bees [illegible] on [illegible] — Bees would thus have an admirable chance to [illegible] — Hatter's [illegible] might be combined with the [illegible] figured on

20 — June 20th 1863 } Showery — warm close — bees today [illegible] two but got [illegible]
Journal from R.I. } [illegible] — [illegible] — A [illegible]
[illegible] — [illegible] the [illegible] —
[illegible] yesterday — [illegible] —
[illegible] queens — A [illegible] queen [illegible]
[illegible] — [illegible] queen [illegible]
[illegible] yesterday [illegible] the [illegible]
[illegible] queen [illegible] — [illegible]
[illegible] — A queen cell that had been left [illegible]
and [illegible] colony [illegible] — but [illegible] queen —
[illegible] — [illegible] the [illegible]
queens — Had [illegible] hatch [illegible] got large queen [illegible]
and [illegible] — (28th) [illegible] — bees got [illegible]
A [illegible] — [illegible] bees [illegible]
[illegible] — [illegible] — 3) [illegible]
[illegible] — [illegible] queen — 29th) [illegible]
[illegible] yesterday [illegible] queen cell [illegible] — In several
instances [illegible] queen [illegible] to [illegible] queen [illegible] eggs [illegible] disappeared —
[illegible] drag [illegible] queen [illegible] them — A colony that deserted
two days ago [illegible] today — [illegible] colony [illegible] the
queen had laid [illegible] eggs [illegible] 24 hours — [illegible] second [illegible] — [illegible]
out-deserted — [illegible] queen [illegible] when I [illegible] them —
Hived a cluster upon a young queen that had [illegible] a hive where 5 [illegible] —
queen [illegible] — not [illegible] a day for honey — [illegible] 30th)
[illegible] — [illegible] got [illegible]
[illegible] that came out [illegible] yesterday came out today — [illegible]
[illegible] — [illegible]
[illegible] queens [illegible] — Old queen in the colony
had [illegible] queen [illegible] them — [illegible] queen [illegible] queen
[illegible] laid upon them — [illegible] young queen — Had a queen hatch from a cell
[illegible] — the cell [illegible]
[illegible]
[illegible] — as we got [illegible] queen
[illegible] — That [illegible] came out again [illegible] —
[illegible] ~~[illegible]~~ [illegible] queen — when bees returned found queen [illegible]
[illegible] I had [illegible] out a large number of bees from a hive [illegible]
[illegible] — [illegible] one of them joined the swarm! Great [illegible]

of white clover – but to day the same out [illegible] to no [illegible] – Found a young [illegible] queen [illegible] but lately before [illegible] – [illegible] that the last [illegible] a drone – (July 1st) 70° – very hot – [illegible] with [illegible] water – before 9 a.m. bees began upon the Linden – [illegible] – just coming into bloom – [illegible] had a [illegible] swarm – [illegible] the white clover began to [illegible] – bees have been upon it – Very [illegible]

(2nd) 74° – Bees just beginning in the linden – [illegible] the strongest – [illegible]

[illegible]

[illegible] – Had a large swarm from one stock with 2nd story – not more than 15 lbs in 2nd story – had much honey below & natural large amount of jelly in queen cells – one more [illegible] bees [illegible] upon nearly 1/2 an inch of jelly – [illegible] that a [illegible] without any [illegible] was much better than [illegible] without the [illegible] – Linden was [illegible] this season – bees commence [illegible] late this morning – (3rd) 70°. 86° – Very hot – clover heavy thunder and rain with strong wind at 5 P.M. – Bees began upon the Linden [illegible] could fly – more work done on white clover than for some time

Had a large swarm – made one – Had a number of very beautiful queens

July 4th – Very hot – [illegible] good queen [illegible] out – [illegible] – Fair honey day – [illegible] had great supply of drone brood – very little honey – (5th) 70°. 80° – Bees [illegible] on Linden – [illegible] on white clover – but little honey [illegible] (6th) 70° [illegible]

[illegible] a fertile [illegible] in a nucleus with a sealed queen nearly mature – She had been [illegible]

[illegible] (7th) 70° – Bees late yesterday on Linden – early this a.m. – Have made a number of [illegible] – From them have two [illegible] – Has the new [illegible] set in place [illegible] – In a few minutes bees began [illegible] to cage queen – I have no reason to expect [illegible]

[illegible]

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[illegible] — the same thing happened second time — A queen cell opened by bees on its side — for a
a very large [illegible] queen [illegible] [illegible]
not gnaw out? — Made three more swarms by "[illegible]" [illegible]
get to settling [illegible] when shaken [illegible] [illegible]
good pieces of combs — do not expect them as [illegible] — Bees are
from 4 hives — [illegible] of the rollers [illegible] them — [illegible]
bees and [illegible] most of them [illegible] deficient in honey — Saw bees this little
more in clover — Swarms made by "[illegible]" work very well — Still the expect is not
this the best way of making artificial swarms (8th) 70° — A nucleus with sealed queen
all at once hummed — found queen just hatched — opened on side and let out by
bees [illegible] the young
queen began to lay in old comb [illegible] — Found
a colony made by "[illegible]" with eggs queen dead and [illegible] one —
[illegible]
by "[illegible]" [illegible]
[illegible]
[illegible]
than last year — [illegible]
(11th) 70° [illegible] white clover [illegible]
[illegible] in a hive with [illegible]
in top then a minute — A very large nucleus made from a colony [illegible]
[illegible] 50 [illegible]
[illegible] colony [illegible]
[illegible]
full — a full [illegible]
[illegible] (12th) [illegible] 4th [illegible]
62° — [illegible]
[illegible] (14th) [illegible]
[illegible]
[illegible]
[illegible] in a hive with [illegible] nucleus
[illegible] (15th) 56° — [illegible] very [illegible]
warmed up — bees busy on white clover — thunder shower passed around
[illegible] figured very cool — [illegible]
[illegible]
[illegible]
[illegible] See P. 219

Journal continued from 26 — May 31st 1861 —

A week of Locusts in bloom — and to day the best of the season for honey — two or three more such days and the old stocks have their supply — From two experiments believe that eggs [illegible] of the queen — How soon a [illegible] queen [illegible] of nearly [illegible] It. Queens — I find no difficulty in giving It. Qs to nuclei with sealed queens — Made a stock by giving 3/4 [illegible] It. Q — empty comb — and shaked out bees — Most of the bees went up but queen did not — the bees been drummed up once and returned — Found a very nice I. Q. in a fine queen cell — a very beautiful one in the very next cell — quite large and nearly closed — (June 1st) Went to Pres. H. for a day — Very hot, beautiful rain last night Made a swarm for him and Dr Smith — (2nd) Sabbath — very hot — showers — (3rd) Very hot — showers — made a swarm for Mr Hunter — also one for Mr [illegible] — Went to Oxford — was amazed at the [illegible] of [illegible] by bees — more [illegible] like before — My nuclei have [illegible] cells [illegible] and comb [illegible] being sealed! Old stocks are very heavy — Locusts [illegible] in [illegible] abundance — On Saturday saw bees on "Coffee Tree" [illegible] Locusts — Took out the full comb from nuclei and gave them empty comb — Could not otherwise see where I. Q. to [illegible] — [illegible] a day now should be lost in [illegible] — [illegible] and [illegible] I [illegible] bees without a queen [illegible] they get one [illegible]! Received a nucleus from [illegible] — on Jun 1st — two away — it was not put in cellar as I directed — bees heated — some dead — but four combs full of eggs [illegible] — [illegible] in two — and only a few in three — [illegible] the comb the bees [illegible] queens — making 5 nuclei — shut up one — [illegible] too much honey — (4th) [illegible] — Cleared up very warm — bees get much store from Locust — (5th) Rain thunder yesterday P.M. — cloudy this A.M. — cleared up warm at noon — bees very busy on Locust — heavy thunder shower in P.M. — [illegible] a little honey — Made a swarm at Mr [illegible] — bees there have [illegible] much — Have made the most I can of [illegible] — [illegible] of 2 to 3 [illegible] than the [illegible] — (6th) 55° – 82° — very foggy in A.M. — very heavy shower in P.M. — [illegible] — Made [illegible] swarm at Mr [illegible] — [illegible] — Saw queen on comb in [illegible] yesterday — eggs in [illegible] cells — none in [illegible] cells — [illegible] P.M. [illegible] in [illegible] — [illegible] to ~~[illegible]~~ whether [illegible] the queen — [illegible] 1/2 [illegible] P.M. — found the one queen cell empty — eggs in one and two [illegible] in each — saw a cell [illegible] queen in — [illegible] being sealed [illegible] — [illegible] (7th) very hot — bees at Dr Hills swarmed — [illegible] got about 1/2 in hive — [illegible] a number of times — at last [illegible] — [illegible] 220 — [illegible] — Made two [illegible] swarms

put the left two boxes [illegible] — few bees to rob it — covered except one comb and
bees defended it — About twice the bees [illegible] — Upper [illegible]
and two more hives from this [illegible] — yesterday [illegible]
[illegible] — White clover [illegible] this season — Put queen in hive with [illegible]

frames they seem to work well — Saw put in a queen cell yesterday sealed
to day — [illegible] bees have made [illegible]
the other [illegible] — [illegible] on the
swarms in a few days more — (8th) [illegible] — [illegible]
get very much from white clover — heard humming of bumble bees in [illegible]
Two Hives with [illegible] — found [illegible]
box in the [illegible] — could not [illegible] — no eggs in it! [illegible]
honey — [illegible] queen in [illegible] — [illegible]
bees [illegible] with [illegible] — [illegible]
frames [illegible] — [illegible]
[illegible] — [illegible]
from the swarms — Any [illegible] discovered in [illegible] yesterday —
[illegible] in which [illegible] was put in [illegible] queen cells [illegible]
a perfect queen — [illegible] fully [illegible] — Had two queens laying eggs —
(9th — 6 P. 86° — Clear — [illegible]
[illegible] with bees, [illegible]
[illegible] clover at [illegible] time — [illegible]
[illegible] — (11th) 57° — One of [illegible]
[illegible] this [illegible]
that they [illegible] each other through the [illegible] — [illegible]
[illegible] — [illegible]
[illegible] — Saw the queen on eggs — queen then eggs from [illegible] —
[illegible] queen cells in upper [illegible]
[illegible] — (15th) — During the past few days [illegible]
[illegible] — [illegible] bees [illegible]
with prodigious eggs — White clover [illegible] — bees
[illegible] — [illegible]
with [illegible] — when put in after [illegible]
[illegible] — [illegible] all [illegible] — [illegible]
[illegible] — [illegible] old [illegible] — had worked [illegible]
[illegible] all the [illegible]
[illegible] wax? [illegible]
[illegible]

Jewish Hierarchy, sketch of. (Spir. Despotism. p. 71.) good.

a third story, but none of the [illegible] from second story [illegible] — The [illegible]
with [illegible] [illegible] not [illegible] in early Spring! Began to [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible]
[illegible] — but the largest and most beautiful [illegible] [illegible] I [illegible] [illegible]!
(16th) [illegible] [illegible] [illegible] a second time — [illegible] [illegible] [illegible] —
(17th) [illegible] [illegible] — [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] could be [illegible] [illegible] [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] — (18th) [illegible] [illegible] [illegible]
[illegible] [illegible] — [illegible] [illegible] — [illegible] to [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible]! [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] — [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] to [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of the
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] —
[illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] —
[illegible] — (19th) [illegible] [illegible] for Mr [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] — (20th) [illegible] [illegible] for Mr [illegible] — [illegible] [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] I [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] I [illegible] [illegible] [illegible] — [illegible] [illegible] of [illegible] [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] of [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible]
of [illegible] [illegible] — [illegible] [illegible] for Mr [illegible] — (21st) [illegible] — [illegible] [illegible]
of yesterday [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] of [illegible] [illegible] [illegible] [illegible] (22nd) [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible]

Jelly-royal- found (June 17th 1852) a considerable quantity in bottom of a cell containing an unhatched Queen- tasted like Quince jelly-light-

swarm unusually weak – Preserving glass hive [illegible] 5th box – from y. Q's – 4 in the frames one [illegible] used two for nuclei and gave to each swarm – On 21st made two more swarms for Mr Capt – London Swarm, which would [illegible] [illegible] [illegible] – 25th) This first [illegible] [illegible] in A. Heavy clouds. In P.M. [illegible] [illegible] this great honey day – 24th There 4 just hatched I. Q's – all were [illegible] – and one as much so as I ever saw – Honey – bees in putting honey [illegible] [illegible] [illegible] a great success – (25th) A nice shower – made some [illegible] – Some I. Q's hatched – two not [illegible] [illegible] – Great day for honey – 26th Two nuclei with y. I. Q's [illegible] – found them & put them in boxes with some brood comb – think my nuclei too small – bees discouraged – [illegible] [illegible] [illegible] stock [illegible] of [illegible] – [illegible] [illegible] [illegible] – many sealed up [illegible] drones – very [illegible] – must have a [illegible] [illegible] – Was the [illegible] queen killed after she began to lay? or are these queen cells occupied by drones! In the [illegible] clouds with appearance of rain – [illegible] clear in P.M. and [illegible] cooler – 27th) [illegible] [illegible] A.M. – 50° – Lost an I. Q. by flying to other [illegible] [illegible] – Another nuclei with I. Q. [illegible] [illegible] [illegible] that queen seem to go out and saved – At my large [illegible] [illegible] left – [illegible] before [illegible] found this [illegible] Q. in A.M. [illegible] out for [illegible] [illegible] she [illegible] [illegible] – saw her high in air – in a few minutes she [illegible] [illegible] caught her and carried her to [illegible] side of [illegible] ([illegible]) [illegible] [illegible] to give her [illegible] there – thought she [illegible] in – but not sure – she must have [illegible] and gone back – her first flight [illegible] her [illegible]! [illegible] [illegible] in [illegible] [illegible] – ought to have clipped her wings – this the penalty of experience – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] in the [illegible] – Bees very fond of [illegible] [illegible] – I think [illegible] [illegible] to [illegible] of whole [illegible] – (28th – A little rain before day – [illegible] [illegible] in A.M. – [illegible] [illegible] for [illegible] – 29th – A bee [illegible] at College [illegible] [illegible] – when they [illegible] to [illegible] well [illegible] – [illegible] [illegible] Q. lost by going to [illegible] [illegible] – [illegible] [illegible] [illegible] Prince – another nuclei with

Hot — Swarmed out — lit high — shook and lowered down limb — bees joined off so queen was easy [illegible] to fly down and go in — gave another comb with eggs — Think the colonies had been too small — when put back in any place in new place they do not leave again — one of royal cells from Dayton ~~[illegible]~~ colony had a small dead larva and very great amount of royal jelly — Think all these queens cells had drones — Having drone layers until the fertile queen given by [illegible] — The College Bee [illegible] not more than half a mile from me — my workers from Italian raised by me are very handsome — Have little doubt that bees are pure — but some of the queens are not so well colored — A Linden in early bloom in front of house — one in its early part [illegible] in blossom [illegible] — Bees are busy [illegible] —

(30th) Had beautiful showers in the A.M. — July 1st — Some showers — cool — bees working splendidly — Swarm at College on same tree and limb where the one that went off Saturday — [illegible] great [illegible] — but it went off — Very hot — [illegible] queen [illegible] of hive I. L. [illegible] 6 days — [illegible] no eggs — [illegible] very large queen — well colored, but had wrinkled wings — [illegible] drone [illegible] [illegible] [illegible] [illegible] [illegible] — July 2nd — Bees work well in Linden — Cage Q. with bad wings — confined by bees in a [illegible] colony had been supplied by adding bees from a colony [illegible] from a distance — A fine queen with colony [illegible] [illegible] — her wing [illegible] so that she cannot fly — A [illegible] I. L. [illegible] confined — [illegible] by [illegible] — (3) 46° — Bees work well — Colony that had [illegible] — [illegible] again — queen has laid a very few eggs — seemed — another [illegible] — [illegible] 3 queens — found queen whose wing was injured on ground near her hive — a few bees with her — think it meant to elope and is [illegible] — have made [illegible] too small — (4th) 50° — [illegible] [illegible] of blossom — [illegible] — Gave I. L. from cage — bees [illegible] — [illegible] that had been in cage [illegible] hours — queen of the hive removed about 12 hours — [illegible] — put her in cage again — Honey has the [illegible] taste — Removed [illegible] from two hives — combs very [illegible] — [illegible] comb building or breeding — may be left in till [illegible] — [illegible] in [illegible] — [illegible] comb — (July 5th) Hot — [illegible] P.M. — found hive to wh. I. [illegible] queen [illegible] — queenless — building drone comb and queen cells — Another [illegible] in cage 24 hours refused [illegible] — put her back — On my [illegible] [illegible] best way to give queen cells almost mature — Give the same

to keep hives at a distance — to get Italian pure drones for another season —
Isolated stock — two queen cells — put the queen cells of several Italian
in [illegible] — and set the others raising more — can get during a few weeks
a great many queens to be raised before hatching — think a very good
[illegible] — Queen with wings [illegible] [illegible] again in the [illegible] [illegible]
[illegible] another colony — (6th) Hot wet day — Shook out bees from frames one
[illegible] — when searching for queen gave them an Italian [illegible] — received bees
[illegible] — some were not shaken off / had been deprived of queen [illegible]
[illegible] — [illegible] after the [illegible] bees took [illegible] Italian [illegible] before
[illegible] [illegible] the [illegible] in with other bees all right — three or comb
[illegible] — In Italian hive raising queen — few workers many drones — saw drones
on [illegible] [illegible] like workers — At 10 P.M. looked at [illegible] bee and found
a worker with large balls of propolis on his legs — (7th) [illegible] showers
[illegible] around 60 — bees work very well — [illegible] [illegible] white clover
very abundant — bees working upon it — (8th) Hot — at noon 72° — showers — took
an [illegible] queen [illegible] to [illegible] from — [illegible] [illegible] [illegible] [illegible] of [illegible]
[illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] — [illegible]
[illegible] queens — [illegible] [illegible] [illegible] — this is a [illegible] of very
great importance — (9th) Splendid rain last night — [illegible] [illegible]
[illegible] to [illegible] [illegible] had been [illegible] [illegible] that the queen [illegible]
[illegible] [illegible] to [illegible] [illegible] [illegible] [illegible] queen in her cage
[illegible] [illegible] — (10th) Showery — 11th. 12 — Showery — put at a distance
[illegible] [illegible] [illegible] [illegible] [illegible] of 12th — [illegible] [illegible] [illegible]
[illegible] have been [illegible] — [illegible] [illegible] propolis —
13th — 50° — [illegible] — bees [illegible] — 14th clear cool [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible] — [illegible]
[illegible] queen cells [illegible] [illegible] [illegible] — [illegible]
[illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible]
[illegible] [illegible] had [illegible] to [illegible] — (15th) Cloudy — [illegible] cool —
three days ago shook off bees from comb in hive with [illegible] [illegible] comb —
[illegible] [illegible] [illegible] [illegible] [illegible] many [illegible] — and gave the comb
[illegible] [illegible] [illegible] — the hive has raised many drones — [illegible] the cells
[illegible] [illegible] [illegible] like queen cells — they have [illegible] [illegible] queen cells
[illegible] [illegible] — some sealed — [illegible] [illegible] had [illegible] [illegible] — [illegible] others
[illegible] the [illegible] [illegible] royal jelly — the bees [illegible] [illegible] [illegible] —
[illegible] bee [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]

Of [illegible] 180 cells fed to contain eggs — 46 have one each — 58 = 2 — 18 = 3 — 19 = 4
8 = 5 — 3 = 6 — 4 = 7 and 3 have 8 eggs each! Have given the colony comb [illegible]
[illegible] two — [illegible] of [illegible] and bee [illegible] — [illegible] ~~[illegible]~~ [illegible] colony [illegible]
[illegible] — [illegible] to see of ~~these~~ [illegible]

Joy in heaven over the repenting sinner Phil. [illegible] Piety in Spirit. P. 38..41.

were too crowded her eggs — a [illegible] will breed any worker comb — [illegible]
[illegible] of [illegible] will lay at all in worker comb when she can get drone
18th — Yesterday [illegible] — [illegible] cold [illegible] — [illegible]
[illegible] — Examined 3 combs
of fertile worker colony — one had no eggs — one which they had enlarged had [illegible]
800 cells fed for eggs with 640 eggs — the other ~~120 with 64 eggs~~ 370 cells
with 826 eggs — total eggs 1466!! There are probably several fertile workers [illegible]
these eggs were laid in 24 hours — some of these were [illegible]
[illegible] without appearance — some cells had 4 and 5 and
[illegible] had none — these were mostly on the edges — (17th) 56° — cool [illegible]
Brood comb given to stock of drone laying fertile worker [illegible]
[illegible] had eggs [illegible] the worker eggs in the cells —
one fertile worker must have [illegible] with the bees — Found probably the drone queen which
has had the [illegible] contracted for several days (and yesterday) [illegible]
of [illegible] — [illegible]
[illegible] — Examined comb of fertile worker colony that had 826 eggs
yesterday and found 1362 to day! one cell had 10 eggs! [illegible]
In the comb of eggs laid by queen they had [illegible] queen [illegible]
[illegible] cells [illegible] — Colony whose drone queen [illegible]
[illegible] P.M. [illegible] worker [illegible]
[illegible] came out [illegible] in [illegible] day — [illegible]
[illegible] drones [illegible]
[illegible] — [illegible] "out in the cold" — [illegible] — Here no longer need of drones and honey is
[illegible] — [illegible] white clover smells [illegible] — 19th — Found a
few more drones [illegible] fertile [illegible] of their [illegible]
[illegible] a hundred! [illegible] — [illegible] a worker "[illegible]" [illegible]
[illegible] to another hive — [illegible] of black queen and [illegible]
[illegible] — [illegible] fertile worker [illegible] in the drone comb — [illegible]
[illegible] — saw eggs in a piece of drone comb [illegible] piece [illegible] — [illegible]
these eggs were [illegible] — [illegible] queen as they [illegible] queen cells — [illegible]
of drones — [illegible] queen after [illegible]
[illegible] — [illegible] one of the fertile worker [illegible] I had made two [illegible]

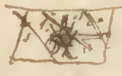
[illegible] [illegible] [illegible] [illegible] [illegible] — appeared at [illegible] [illegible] in Y. 2. [illegible]
hatched — In its place [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] in great [illegible] — O [illegible] [illegible] [illegible] with eggs for [illegible] J
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
to [illegible] half [illegible] [illegible] A. [illegible] by Q. B. [illegible] eggs and B. — [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] of [illegible] flying came to all [illegible] — [illegible]
another [illegible] hauling some at drones — Am anxious now to get all the drones
I can raised in nuclei with Y. 2's — (20th) White clover still very abundant
but bees do not work so much on it — This A.M. examined Egyptian hive from
wh. the Q. for the eggs had been taken 12 days ago — and to wh. I had given a
queen (unless a [illegible]) sealed royal cell wh. the bees destroyed — Found 20
perfect queen cells! One hatched and while eying two others hatched —
and in a [illegible] [illegible] when they were put into they could be distributed
[illegible] large and very handsome hatched — They were all on the bottom edges
of the ~~frame~~ combs — some very long — Bees exceedingly cross — Smoked
them but [illegible] — Shook them on sheet before empty box — found
two queens — one small and not highly colored — other fair — Gave
the queens to nuclei in also queen cells — two of them to hives from which
a third queen had been taken — without much interest to the result —
In the P.M. [illegible] nuclei to wh. Y. 2. from Egyptian hive had been given [illegible] —
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] queen here — left her two minutes to see how they [illegible] like to
find her very [illegible] — gone when I returned! Could not find her in hive [illegible]
[illegible] [illegible] — if [illegible] bees take her — Nucleus from fertile worker hive to
wh. Y. 2. [illegible] queen had been refused — and yet more eggs in all [illegible] those combs —
another [illegible] [illegible] drone eggs started a queen from worker eggs — while they
[illegible] with eggs of fertile workers — ! Found [illegible] in [illegible] of one of
the nuclei — many bees [illegible] — in a small piece found a dozen or more —
in a [illegible] stock saw white film — cut out several [illegible] — in one comb wh.
[illegible] had all hatched — [illegible] had been — as combs were cut — Took away
[illegible] Q. whose wing had been hurt and wh. had left — examined again to
[illegible] — [illegible] much [illegible] — no eggs — while holding her in my hand and
[illegible] [illegible] [illegible] [illegible] and she [illegible] off to the — [illegible]
[illegible] of them in [illegible] queens — the Italian [illegible] [illegible] [illegible]
[illegible] — the latter was in a small nucleus — but they had with her
sealed queen — [illegible] [illegible] [illegible] — (21) [illegible] [illegible] this A.M. — [illegible] 227
Cool — [illegible] [illegible] — [illegible] [illegible] had not been [illegible]
[illegible] [illegible] [illegible] ~~[illegible]~~ [illegible] [illegible] [illegible]

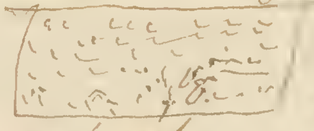
yesterday bees flying – lighted under it and around it – [illegible] – [illegible] very much [illegible] the natural position – The colony have begun a number of queen cells 218

(21) J U

~~[illegible] queen [illegible]~~ – [illegible] in [illegible] colony – [illegible] –

(22) [illegible] – [illegible] East – [illegible] queen [illegible] (20th) [illegible] [illegible] hatched a beautiful queen – Found 55 [illegible] [illegible] [illegible] [illegible] [illegible] (say strip) on the bottom edge of comb [illegible] [illegible] [illegible] edge [illegible] piece of comb





comb not filled out – but a [illegible] – In [illegible] queen (20th) [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] that queen! [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] queens [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – (23) 60° – [illegible] that lost the beautiful queen have 13 queen cells [illegible] larvae – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] after given to the bees [illegible] comb – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] (24th) [illegible] night [illegible] East – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the nuclei [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] ~~[illegible]~~ queen [illegible] – [illegible] [illegible] [illegible] eggs – [illegible] not from their drone eggs – [illegible] [illegible] queen – the fertile [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] of eggs – [illegible] [illegible] [illegible] [illegible] in new [illegible] [illegible] [illegible] in old worker [illegible]! [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – A queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – (26) [illegible] last night – [illegible] [illegible] queen that was dead has a queen [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] queen [illegible] [illegible] [illegible] queen – A colony [illegible] queen [illegible] – [illegible] [illegible] [illegible]

Killed off [illegible] [illegible] [illegible] [illegible] for want of honey – [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] queens [illegible] [illegible] [illegible] more [illegible] fertile – [illegible] [illegible] [illegible] [illegible] queen – [illegible] [illegible] [illegible] perfect – [illegible] from queen of last year [illegible] [illegible] [illegible] [illegible] very beautiful – (27th) At 5 P.M. – examined eight nuclei with [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] queens [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – (28th) Saw at 6 P.M. [illegible] [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] 7 days old – last night [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] – (29th) [illegible] [illegible] [illegible] [illegible] queen [illegible] [illegible] 40 hours ago – eggs – also larvae which must have been [illegible] [illegible] [illegible] after queen was hatched – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Nucleus had made queen — eggs of Italian worker in the comb & some sealed one — they [illegible] queen cell given one had [illegible] queen that hatched 9 days [illegible] State very full of drones — Took off the [illegible] u upper part of hive [illegible] J.B. — middle one [illegible] — [illegible] quite [illegible] — [illegible] very [illegible] [illegible] — [illegible] [illegible] could not [illegible] middle one [illegible] — [illegible] [illegible] last August they [illegible] [illegible] [illegible] — did not [illegible]

and [illegible] [illegible] [illegible] the bees [illegible] [illegible] — A large colony (Queen) [illegible] queen [illegible] — could not get queen — very much [illegible] — do not think [illegible] in perfection. [illegible] — some taken some time [illegible] replaced — Found there the [illegible] (eggs [illegible]) [illegible] laid eggs — saw none in two colonies that have queens imperfect [illegible] One of these queens 8 days old — one of [illegible] queen [illegible] — bees [illegible] on every [illegible] — those from which the queen taken on Friday and 8 queen cells [illegible] queen — cells opened — they have been [illegible] — (3rd Colony the [illegible] yesterday — left again today three times — gave them eggs [illegible] [illegible] which queen [illegible] had [illegible] all queen cells [illegible] opened [illegible] — could find no queen — gave [illegible] eggs here queen cells — (31st Colony that [illegible] yesterday [illegible] again today — gave this queen [illegible]) to another nucleus — to see if [illegible] bees are the cause of this [illegible] colony [illegible] eggs in cell — [illegible] to which [illegible] queen [illegible] had been given at 11 AM — took away queen cells [illegible] [illegible] at 2 P.M. — found the queen had hatched — three cells [illegible] opened — the queens [illegible] — very beautiful — one very large — found one [illegible] [illegible] queen [illegible] on comb — not quite 11 days since queen [illegible] — [illegible] [illegible] this nucleus 3 queen cells — they started 10 [illegible] 15, [illegible]!! [illegible] this A.M. [illegible] last night — 3 P.M. [illegible] the queen cells [illegible] at 2 P.M. and [illegible] had a white [illegible] — [illegible] [illegible] with a [illegible] [illegible] queen cells [illegible] [illegible] — Took out of the cell a queen [illegible] [illegible] — [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] the [illegible] [illegible] old — (6 P.M.) Queen that has left 5 times has remained [illegible] — since given to the [illegible] nucleus — the nucleus deserted! Cannot [illegible] [illegible] of the [illegible] of the very feeble nucleus — [illegible] [illegible] — It is the [illegible] [illegible] the queen that gives the impulse [illegible] 229 [illegible] 7 [illegible] [illegible] 5 [illegible] before [illegible] 12. [illegible] — she came out [illegible] [illegible] her — put her back — in [illegible] hour found her closely [illegible] hive — Took her out — gave her to the after [illegible] [illegible] — and her [illegible] 2. [illegible] [illegible] been taken from — [illegible] of [illegible] [illegible] had [illegible] — Has plenty of honey and eggs [illegible] — [illegible] fertile and confident 2. in a [illegible] — would not [illegible] — [illegible] [illegible] [illegible] bees — [illegible] impossible [illegible] — [illegible] are getting considerable honey —

(August 1) 94° at 2 P.M. — Stranding colony [illegible] clustered [illegible] 2. and are building queen cells — their queen gone to [illegible] [illegible] — (2) Queen of [illegible] now laying eggs — must have been ~~[illegible]~~ impregnated before [illegible] is [illegible] [illegible] time in [illegible] [illegible] — did not [illegible] to [illegible] and bees [illegible] — whether [illegible] that I saw four days ago had been [illegible] drones just began to lay — colony [illegible] — comb [illegible] — [illegible] with plenty of bees and good comb — did not lay till 10th day after [illegible] — do not [illegible] this by feeling — [illegible] doubtless — showed great disturbance when [illegible] yesterday, ~~[illegible]~~ Removed queen — they [illegible] [illegible] [illegible] one with a queen — (3) [illegible] a hive of Prof. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] — [illegible] queen cells cut out — in four days [illegible] — 12 queen cells [illegible] — [illegible] was not fertile [illegible] after the [illegible] of the season — (5) [illegible] for last week very hot — bees [illegible] [illegible] honey — [illegible] a [illegible] with old queen — [illegible] [illegible] [illegible] [illegible] [illegible] with the [illegible] [illegible]! [illegible] going to change queens (6th) Very hot — [illegible] [illegible] [illegible] queens [illegible] [illegible] [illegible] — 92° — (7) very hot [illegible] day — 92° — (8th) very hot — 94° — [illegible] [illegible] at night (9th) Beautiful [illegible] — (10) [illegible] [illegible] — bees at work on buckwheat [illegible] in the P.M. — Received queen from [illegible] — very few bees — [illegible] [illegible] — [illegible] Dr. Parsons's queen — when I put her back that bees [illegible] her — set her away — gave her ~~[illegible]~~ in cage to a [illegible] [illegible] queen taken away to day — (11) Beautiful rain last night — cloudy — hot — (12) Parsons' queen dead in her cage — bees [illegible] her alone! [illegible] —

Feb 5th 1862 / 18° ‥ 45° — Beautiful day — Examined most of my [illegible] hives — condition good — One that had [illegible] [illegible] of last year had changed its queen — the [illegible] from No 1 [illegible] — had [illegible] clipped her [illegible] [illegible] — (Long silence [illegible] [illegible] [illegible] in my [illegible] [illegible] received two very handsome queens from [illegible] — kept them some [illegible] a week in the house — gave them to [illegible] from which queens taken day before — [illegible] one was taken [illegible] [illegible] [illegible] in [illegible] [illegible] accepted — [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] —

Found a stock weak of bees — all sealed honey gone — no brood — & saw
no queen — gave them comb with sealed brood and eggs from a No 2 Italian
queen — these raise a few queens a from Italian queen eggs to **K**
see whether they have been purely impregnated — Have two queens
reared from [illegible] stock — from eggs taken from his queen — one I think
has been with common drone as her progeny very impure — I raised
one fair queen from the other — must test her further to see if she is
right [illegible] — Have kept most of the honey boards off — Candy put
on the bees nearly taken — but we have had no winter — Average
Nov. 10°. Dec. 44° — Jany 35° — In Dec. had two weeks of almost
Indian summer — white frost at night — beautiful clear days
[illegible] — saw a bee with pollen! Heard that the weather might
excite premature breeding — but found no brood — last of Dec. — it had
no effect to hatch them — One Ital. stock wh. had two upper stories
last season — filled with surplus — (the last one not removed until
Oct. and considerable eaten out) — had lost twice as many bees [illegible]
population — [illegible] in cold weather they have suffered [illegible]
the [illegible] — Has not eat [illegible] honey in proportion to the [illegible]
Drones were appear in this fine day early — (6th) 40..50 — Rain last night —
cloudy to day — Others have gathered some sweets — from maple trees
tapped [illegible] — Italian queen still found in the cluster of bees
dead on the [illegible] board! [illegible]
she [illegible] because of [illegible]
[illegible] — these continue her colony by aid from other stocks —
The [illegible] Italian queen still [illegible] — [illegible]
not as good as one raised by me last season — [illegible]
yellow [illegible] — (7th) 30°..34° Cloudy with rain — calm — ~~(8th) 10°..25°~~
~~Cloudless and calm~~ 9th (8th) 30°..38° — Cloudy — calm (9th) 12°..30 —
Cloudless and calm — (10th) 13°..34 — A.M. clear — P.M. cloudy — very raw —
~~(11th) 30°..~~ Examined the very populous stock — queen the one given in 1860 — Reared
from Parsons No 2 & 3 — impregnated by black drone — (11th) 30°..38° — [illegible] very windy
Two very populous stocks have queens to produce [illegible]
to get drones from them in advance of other hives — have too many black bees near me
(12th) 34°.. " Spring like — snow all gone — bees active — [illegible]
[illegible] Italian queen No 2 — has a number of queen cells — [illegible]
[illegible] ones — [illegible]
it very [illegible] — [illegible] has been kept off [illegible]
[illegible] well — Heard a [illegible] heard 3 days ago —

(13th) 25°..40 – Cloudy – Rain – Gave candy to a number of hives – one Pure queen with common drones – very small brood – [illegible] bees hatching – this hive [illegible] has two [illegible] – Cast [illegible] – Queen went into [illegible] and [illegible] of the bees – [illegible] raised there – the [illegible] the bees [illegible] about [illegible] of the breath – as the bees increase their heat – honey goes off very fast – Those feed with Candy only – [illegible] [illegible] [illegible] [illegible] out of April – I have 83 stocks – 18 in D.C. [illegible] all of these except four or five have queens of last year – (14th) 8°..16° = Coldest day this Winter – 4 inches of snow fell last night – very clear and [illegible] – (15th) – 4°..20 – Clear – still – Heard about a week ago of much floating ice in vicinity of Newfoundland – (16th) – 2°..35° – Variable – Rainy Sun-set – (17th) 31°..46° – This a.m. found ice in glass (double) hive which had no upward ventilation! Cloudy and a little rain – Hive without queen has none hatched yet – News of the taking of Fort Donnelson [illegible] this P.M. – (18th) 28°..36 Cleared off in the night – Clear calm – Hive raising queens had two cells from which queens had emerged – Found one – small – [illegible] colored – [illegible] the mother to have been [illegible] impregnated – (The mother was reared from [illegible] queen that has never produced yet a dark queen) [illegible] cells yet undisturbed – These queens hatched in less than 13 days – stock feeble – hive thin with all the line off – and no [illegible] [illegible] – and some of the coldest weather of the winter – The queen I saw this a.m. – must have hatched last night – in a few hours over 12 days from the time queen was lost – (19th) 28°..32° Sleet or rain freezing as it fell – 9 P.M. 26° – Clear – Trees very heavily coated with ice and two inches of snow since dark – If severe cold great danger to the fruit buds –

Plan of operations that suggest themselves for operations for the coming bee [illegible] – (1) Transfer [illegible] some of my old box hives so as to have say 80 stocks in my C Hives – 2) to [illegible] by judicious feeding and helping of weak stocks to get [illegible] the colonies in good order. (3) Form my nuclei for raising Italian queens in April as early as the [illegible] [illegible] and [illegible] [illegible] [illegible] – aiming to [illegible] the [illegible] queens hatch a little before the drones so as to lose no time – (4th) Supplant at once doubtful or common queens to have no common drones – (N.B. The nuclei in common queen stocks to be prevented from raising drones –) (5th) Each stock when able to gather surplus stores to have hive with frames on the top – and frames with [illegible] being lifted up and as soon as needed honey [illegible] [illegible]

placed on honey-board of top hive — (6th) Hives allowed if they wish
to swarm — in about a week all queen cells but one removed —
or all removed and queen given — (7th) When honey harvest K
nearly over — say about first week in July — if the hives are heavy
and populous — from every four that have not swarmed make
one taking two combs from each — (A. Benton's method see Bee
Journal) — In removing surplus leave some ^upper stories of stocks not touched
to have honey in case any are too light in the fall —
(N.B. These artificial colonies must not be made so as to prevent
upper hive being filled — nor at all unless all circumstances propitious)

Suppose 4 out ^of 20 swarm — from the other 16 make 4 = 28
" 6 " " ... . 14 " 3 = 29
" 7 " . . . . . 13 " 3 = 30 —

In removing honey for selling, take the end combs which were lifted
up into the upper — also in removing the [illegible] take the combs from
the hive [illegible] to catch up bees — but from the [illegible] above [illegible] —
Use fertile queens from the nuclei for the new swarms made — and
let the hive raised to [illegible] before the first one is to be removed
the [illegible] of strong [illegible] may be a nucleus — [illegible]
[illegible] enough bees to carry [illegible] — but if this is not done
it [illegible] when these swarms are made not be liable to suffer from the
loss of bees as it were not have swarmed — It will be interesting at the
close of the season to see how these plans have succeeded etc.
I estimate the honey which can be secured on this plan at from 50 to
100 lb per stock — (20th) 35°. 39° — Very heavy cold with rain [illegible]
[illegible] at intervals — Willow and other trees much better (21) 26°. 42°
Cloudy with sun trying to break through — Bees [illegible] off [illegible] some —
but heavily [illegible] yet — Two stocks in M.C. Hive found dead —
no candy given ^to one they ^had got out of food — Counted bees on one of
[illegible] stocks, about ~~4000~~ 5500 bees — The other had candy but
cold weather confined bees and they died — It was not able to [illegible]
to candy when no liquid supplies — Eternal vigilance the price of bees!!
(22) 36°. 42° — Cloudy — Foggy — [illegible] Bees [illegible] of [illegible] to
day [illegible] — [illegible] (23) 43. 59. [illegible]
[illegible] — [illegible] bees [illegible] by thousands [illegible]
[illegible] — Hive [illegible] queen had to young queen [illegible]
[illegible] — [illegible] not [illegible] dead — [illegible]

queen they belong — the young bees beginning to fly out — very weak [illegible] (M. a) 9 — 50° — Ap 10 — [illegible] wind changed to [illegible] in the night — Wind N.W. — (24th) 32°.. 36° — [illegible] cold, with flurrying [illegible] all day — Since bringing home all my stocks of Mr [illegible] and transfer them to movable comb hives — using any small pieces of comb for making combs for queens — Such as pure black queens must be arranged with such 3/16" openings — their queens being got rid of as soon as possible — By keeping a vigilant eye upon their combs but very few drones need be produced by them —
(25th) 22°.. 38° — Clouded early in the A.M. — very raw wind — (26th) 37°.. 54° — Clear at 2 P.M. — bees flying briskly — Brushing out of their hives the [illegible] [illegible] a portion of the candy given them — (27th) 25°.. 38° — Some Lightning last night — wind changed to N.W. — variable and very raw wind — (28th) 23.. 36° Rain early A.M. — P.M. very clear — bees fly a little — Brought home my bees from Mr [illegible] — (March 1st) 22°.. 34° — Cloudy — raw E. wind — at 9 P.M. — began to [illegible] (2nd) 31°.. 38° — Wind still E. heavy rain last night coating the trees with ice — some broke down — strong wind in the night with severe thunder and vivid lightning! thermometer with scarcely any perceptible range during the day — (3) 32°.. 21° Rain last night — trees not so much coated — very windy with snow flurries — a real winter day (4th) 24°.. 35° — Cloudy — milder towards evening (5th) 23°.. 3[illegible] — Cloudy raw with snow flurries (6th) 21°.. 32 — Variable — very raw — (7th) 25°.. 41° — Variable — at 2 P.M. — a few bees on the wing — [illegible] again [illegible] — no appearance of any eggs — [illegible] queen to [illegible] some time ago sealed [illegible] (8th) 2[illegible]°.. 46° — Wind S.E. — by 2 P.M. — bees began to fly — [illegible] greedily of [illegible] [illegible] honey in stock bought from Mr [illegible] — had [illegible] them — [illegible] — Found very populous hive had [illegible] in four combs [illegible] had no honey [illegible] — large [illegible] — [illegible] readily — but as they [illegible] at one time — not one [illegible]
(9th) 32°.. 46° — Variable — few sprinkles of rain — bees [illegible] greedily for rye flour [illegible] till they did not see longer to get it — [illegible] Italian [illegible] getting [illegible] — (10th) 47° — Rain during the night — [illegible] queen to colony [illegible] all sealed — no eggs — she is [illegible] 20 days old — 34° at 9 P.M. (11th) 51° – 49°. (12th) 36° – ~~45~~ 55°
(13th) 41° – ~~[illegible]~~ 61°. (14th) 51° – 56°. (15th) 40° – ~~37~~ 42°. (16th) 34° – 37°. (17th) 34° – ~~37~~ 44°
(18th) 31° – ~~46~~ 55° (19th) 37° – 46°. (20th) 46° – ~~49~~ 47°. (21st) 38° – 41°. (22) 35°. 41°. (23d) 36° – 36°
(24th) 40° – 30°. (25th) 29° – 47°. (26th) 37° – 41°. (27th) 30° – 48°. (28th) 34° – 35. (29th) 46°
(30th) 46° – 70°. (31st) 38° – (Ap. 1st) 36° – 48° (2d) 47° – 49°. (3d) 48° – 63°

March 19th Mr Cleveland to Oxford. Bee [illegible] [illegible] [illegible]
saw, Turning use his compounds,— Blew off an Italian
stock— Took away queen— [illegible] to [illegible] [illegible] [illegible]
[illegible] [illegible] gave her to Ital. [illegible] stock [illegible] [illegible]
very little [illegible] [illegible] & [illegible] black [illegible] [illegible] [illegible]
(22) With Dr J. P. Kirtland [illegible] [illegible] [illegible] [illegible]
[illegible] Italian [illegible]— [illegible] by [illegible] the "reel"!, Mr
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible]— (April) 4th— [illegible] [illegible] 46°..70° [illegible] [illegible] [illegible]
some honey— (5th) Examined stocks with [illegible] compound— all [illegible]
well— Queens easily found— Large [illegible] stock near barn had drone eggs
yesterday— Took its queen and gave in cage to a stock given to me by Dr
Kirtland— Took the [illegible] Queen of the [illegible] [illegible] and gave to the [illegible]
[illegible] [illegible] in a cage— [illegible] Ital. queen [illegible]— [illegible] [illegible] [illegible]
her away— 46°..50°— windy— [illegible] [illegible] last night— (6th) 32..56— [illegible]
frost last night— A. M.— [illegible] P.M.— very pleasant and bees [illegible] pollen
some honey [illegible]— [illegible] [illegible] [illegible] Queen [illegible] [illegible] [illegible]— [illegible] [illegible]
queen [illegible] [illegible] stock [illegible] the one that had Ital. queen— [illegible] [illegible]
[illegible] [illegible] left [illegible] queens— (7th) 38°..41°. Heavy rain during night and [illegible]—
Rain during the day— very raw— grass and grain [illegible]— (8th) 41°..40° Heavy
rain from the E. during the night— Heavy rain with cold E. wind all day—
(9th) 35° 36°— Wind [illegible] [illegible] [illegible]— rain falling [illegible] [illegible] in A. M.—
(10th) 36°..46°— Wind [illegible]— sun out a very little— [illegible] [illegible] [illegible] considerably
[illegible] [illegible] [illegible] has destroyed the eggs in drone comb [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]— [illegible] very clear—
(11th) 31°..56°— Clear till 2 P.M.— wind strong E— bees out much— [illegible] [illegible] to
[illegible] to [illegible] [illegible]— [illegible] [illegible]— [illegible] [illegible] cloudy [illegible] E—
(12th) 47°..54°— Wind E. cloudy— bees out some— by 11 A.M.— heavy rain [illegible] [illegible]—
continued for many hours— towards night wind more to S. E— [illegible] looks very well—
(13th) 49..63— Wind [illegible] S— some rain— warm [illegible] P.M.— [illegible] [illegible] [illegible] [illegible]
(14th) 48..62— [illegible] in A. M.— bees very busy on pollen got some honey— towards [illegible]
[illegible] [illegible] E. [illegible] rain— cleared off in night— (15th) 49..74°— Bees very active [illegible]
pollen— got some brood comb from Ital. hive queen— found two [illegible]— [illegible]
[illegible] has laid some drone eggs— [illegible] [illegible] [illegible] examined— [illegible] [illegible] [illegible]
difference in the working of black bees and Italians— [illegible] [illegible] [illegible] [illegible]
(16th) [illegible] [illegible] [illegible] [illegible] queens— [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
45°..75°

one a select queen from Italian stock — [illegible] evening made a nucleus and gave it the sealed queen from Italian stock — bees [illegible] at it this morning very cross — until the captured — [illegible] both [illegible] — Bees been bearing pollen to day — Bees have been having a [illegible] of [illegible] — more than [illegible] for them — Some having pollen — feed to bees about [illegible] to them —

(17th) 60..70 — Thunder & heavy rain last night — Bees in nucleus had provided the two queen cells [illegible] — the error of being [illegible] by [illegible] and not having [illegible] before dark to make two nuclei as I intended — (18th) Rain — Peach and Sugar Maple trees in full blossom — Maple blossom very fine this season — opened one of the queen cells — queen apparently alive — do not think it will hatch [illegible] — gave the other to bees — 45 [illegible] in my [illegible] account [illegible] — bees have been [illegible] in a week — warm weather [illegible] them some — There is [illegible] so [illegible] pollen that [illegible] of peach [illegible] their [illegible] — some of the hives [illegible] and yet [illegible] appeared [illegible] — (18th) 57..66 they flew in [illegible] to day [illegible] the drones. — Some bees [illegible] — drone [illegible] in [illegible] hive! The [illegible] in [illegible] the [illegible] to the strongest — [illegible]

(19th) 42..56 — Showery — bees able to get some [illegible] and [illegible] — Cleaned out [illegible] stock — [illegible] in very poor [illegible] — some very [illegible] — [illegible] of them with old, [illegible], mouldy, [illegible] from old stock — (20th) 40..49 — [illegible] heavy in the night [illegible] during the day [illegible] and heavy rain — [illegible] hatched this [illegible] — very beautiful and large — [illegible] two queen cells [illegible] the hive — gave the young [illegible] queen back to the [illegible] stock [illegible] queen cells [illegible] in the night! (21) 44..54° Heavy rain during the night [illegible] has shifted to [illegible] during the day — [illegible] queens [illegible] — [illegible] the other [illegible] — the [illegible] (18th) and I opened [illegible] 18th a [illegible] that [illegible] before they [illegible] from [illegible] think [illegible] — Feel more and more convinced that Italian queens [illegible] their [illegible] than [illegible] — (22) 37..56° — Heavy rain last night — This A.M. wind [illegible] shifted to [illegible] — at 12 M. — Sun appeared — bees [illegible] can get [illegible] of peach trees very fine — [illegible] better [illegible] before [illegible] — [illegible] made all right — Found [illegible] queen of yesterday [illegible] — [illegible] had [illegible] — [illegible] gave [illegible] [illegible] J. C. and gave him to [illegible] I had taken [illegible] and gave [illegible] the [illegible] stock [illegible] which had a queen [illegible] — This

best queen [illegible] [illegible] but [illegible] [illegible] – but [illegible] [illegible] – [illegible] [illegible] [illegible] much honey –
(23) 40..54° – [illegible] [illegible] yesterday [illegible] – [illegible] [illegible] [illegible] [illegible] to [illegible] [illegible] to be
[illegible] for [illegible] [illegible] – Clear early – before noon clouded over – rain – bees [illegible] **O** **K**
for a while [illegible] – [illegible] [illegible] [illegible] [illegible] from [illegible] [illegible] [illegible] queen – [illegible] [illegible] [illegible] [illegible] to
cut out the honey – [illegible] [illegible] of the [illegible] of [illegible] [illegible] to [illegible] [illegible] [illegible]
[illegible] – [illegible] [illegible] of comb from [illegible] [illegible] [illegible] to [illegible] from [illegible] to [illegible] queen –
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible]
eggs – (24) 33°..42° – Rain last night & – between 2 and 3 inches of snow on ground
in [illegible] – mostly melted during day – [illegible] rain – fed bees with honey [illegible] [illegible] [illegible]
[illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible]
of [illegible] [illegible] – [illegible] [illegible] – (25) 31°..54° – Cleared off in night – ground had a
crust frozen – fruit blossoms do not [illegible] [illegible] – beautiful day for bees though
rather cold – [illegible] [illegible] remaining hives from [illegible] – [illegible] [illegible] [illegible] – but
few had good [illegible] – One had a queen cell with [illegible] in it – [illegible] queen [illegible]
or [illegible] [illegible] with a [illegible] of bees around [illegible] [illegible] [illegible] [illegible] [illegible]
queen [illegible] [illegible] [illegible] queen [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] the
bees [illegible] – changed position of [illegible] [illegible] – so as to [illegible] [illegible] [illegible] [illegible]
up [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] –
[illegible] [illegible] [illegible] [illegible] I [illegible] – [illegible] [illegible] [illegible] queen [illegible] [illegible]
[illegible] – [illegible] [illegible] [illegible] not [illegible] [illegible] [illegible] [illegible] to [illegible]
then [illegible] [illegible] [illegible] [illegible] [illegible] honey – [illegible] [illegible] [illegible] – (26) 34°..65°
Heavy white frost – no apparent damage to fruit blossoms – [illegible] [illegible] [illegible] perfectly
clean – [illegible] [illegible] [illegible] [illegible] – both queen [illegible] [illegible] [illegible] – [illegible] [illegible]
in blossom – peach, cherry, pear and plum [illegible] blossoms [illegible] – Made
two [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] this [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] in the [illegible]
[illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible]
[illegible] [illegible] to [illegible] – (2) 48°..74° – Beautiful day – bees [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] –
One [illegible] [illegible] queen – [illegible] laying [illegible] – [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] by [illegible] [illegible] – [illegible] [illegible]
[illegible] [illegible] [illegible] – (28) 51°..67° [illegible] [illegible] [illegible] [illegible] 4 [illegible] [illegible]
[illegible] [illegible] queen – [illegible] [illegible] – [illegible] [illegible] [illegible] will be very beautiful
[illegible] [illegible] [illegible] [illegible] [illegible] to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
from the [illegible] queen – but shall prefer to rely on the [illegible] queen —

Before 11 A.M. — cloudy and cold in P.M. — rain — Have done nothing for
my queens — took away the combs they had on which they were rearing
their queens — put them in ~~new~~ another with hatched queens — (the cells defaced)
[illegible] we have [illegible] putting young them comb with hatching eggs [illegible]
this would cause them to go immediately into queen raising — (29) 38° " 60 —
Slight frost last night — cold wind in A.M. — P.M. softer — very fair — Moved
a large queenless stock to catch up bees for a new stock with Italian queen —
worked well — caught enough bees — queens all right at sun-set — Opened a stock
altogether in queen way, and found queen had fresh laid three eggs which
she must just have done for a long time [illegible] — [illegible] confined in a
hive — then in another — exchanged their queens — bees confined them at first only
a little — when I opened them later some more — but not enough to excite any
fear — exchange made in a few minutes — then these [illegible] unfertile
and given to one of these [illegible] of the bees in one comb otherwise they were
not placed upon fresh bees (the exposed fresh honey) [illegible] released to [illegible]
hive — for then to the other black stock young queen had been exchanged —
from [illegible] taken with bees in having queen [illegible] the bees [illegible]
[illegible] — give that queen to the first with those I.Q. unfertile — Found
[illegible] for a third time in [illegible] they would have been taken — Slight
[illegible] — bees mostly by mistake [illegible] left out [illegible]
(30) 40° " — Wind East — A.M. cool — very pleasant P.M. — bees working [illegible]
Americans [illegible] yesterday found many queen cells started to day have only few
eggs — and plenty of bees — keeping the heat — but as they had only eggs I think
they [illegible] had nothing in them and that they [illegible] yet [illegible]
Back to [illegible] young [illegible] — Tried Italian bees to have queens [illegible]
most the last week — Exchanged two black queens with confined — in
less than 5 minutes of taking them exposed — [illegible] very little — in about
the [illegible] found queen at home on the combs — Unfertile queen given yesterday
dead — Italian all right — Gave a brood comb with all its bees to one
Italian to strengthen it taking [illegible] — only a few bees were killed —
Black stocks have a very large amount of drone brood — In one I observed
see that queen had picked out drone cells to lay [illegible] operation will continue
for [illegible] quite beautiful — bees brood very abundant in strong stocks —
(May 1st) 40 " 58 — Wind [illegible] S.W. — very good day for bees — at [illegible] a slight
[illegible] shower — changed rapidly to cold — 54° at sunset — Peach blossoms have
been very bad — and have hung on very long — Plum tree blossoms [illegible] this
season — Early apples now in blossom — [illegible] clouds —

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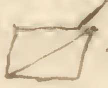
nuclei come this morning (too late to [illegible]) [illegible] [illegible] [illegible] then [illegible] [illegible]

(2) 3[illegible]°. 27° Heavy white frost — [illegible] [illegible] hat — [illegible] [illegible] with [illegible] u K

~~Bees [illegible] [illegible] [illegible] 5° at [illegible]~~ [illegible] [illegible] [illegible] [illegible] [illegible]
night — Had eggs from her queen [illegible] but [illegible] — [illegible] [illegible] [illegible]
queens — [illegible] [illegible] [illegible] from [illegible] by [illegible] the best colored [illegible] [illegible]
of any that he has — Gave the brood to five nuclei and part to the
one [illegible] — Shall not after this make nuclei [illegible] [illegible] young [illegible] —
Shall cut out a square from large comb of size of [illegible] [illegible] — and
then cut it into two triangles —  — bees will soon replace the square
and fill with eggs — All the eggs of the large nucleus were hatched and
the [illegible] about the best age — but they could [illegible] too old to be used
as [illegible] as I could wish — Gave [illegible] queen from Glass hive queen in a cage
for [illegible] — she had [illegible] to [illegible] bees in cage [illegible] [illegible] [illegible] [illegible]
her — (3) 41°. 65° Beautiful day — bees [illegible] busy — Cut out cells of [illegible]
[illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] nuclei — [illegible] in the [illegible] [illegible]
[illegible] of glass H. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] —
[illegible] [illegible] — Three of the nuclei with [illegible] [illegible] [illegible] [illegible]
started — one has five — Bees evidently prefer to rear queens from young larvae —
[illegible] as soon as the queens are sealed [illegible] [illegible] [illegible] [illegible] [illegible]
to [illegible] [illegible] to [illegible] them to [illegible] [illegible] [illegible] [illegible] the [illegible]
[illegible] [illegible] to the hive with [illegible] queens — [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — Bees [illegible]
[illegible] [illegible] queen [illegible] [illegible] [illegible] to [illegible] [illegible] — (4) 44°. 66° — Beautiful
day — [illegible] [illegible] busy — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

(5) 46°. 62 [illegible] — [illegible] [illegible] [illegible] — bees [illegible] [illegible]
[illegible] to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] — [illegible] bees in nucleus — [illegible] [illegible] [illegible] hatched [illegible] [illegible]
queen [illegible] [illegible] [illegible] — her off — the [illegible] [illegible] [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] — [illegible] bees [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] the [illegible] [illegible] her head and shoulders [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] from [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] picture [illegible] [illegible] [illegible] [illegible] [illegible]
beautiful — [illegible] [illegible] [illegible] [illegible] — but must wait till her colors are more clear —
Glass hive queen [illegible] [illegible] to [illegible] [illegible] [illegible] nuclei [illegible] [illegible] [illegible] [illegible] 239
[illegible] hive queen — [illegible] [illegible] [illegible] [illegible] [illegible] to be [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] — (6) 40°. 64° — [illegible] at [illegible] — [illegible] [illegible] — beautiful day — bees [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible]! [illegible] queen cells cut out [illegible] [illegible]

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Lawyers, Reason assigned why in their plead, they show more common sense than ministers in their preach; (Withrington [illegible] Radicalism P.83..5)

have hatched — two more queens — do not like plan of giving the cells to stock up nuclei — Introduced one to a stock that had a sealed queen cell — she was well received — both along an impure queen — and gave the other in cage — Formed two more nuclei from eggs of [illegible] — Have all the Italian brood in 3 nuclei and have [illegible] [illegible] [illegible] with [illegible] eggs — have 16 queen cells from [illegible] — Shall form as soon as eggs are replaced in new comb but more nuclei [illegible] [illegible] from G. H. 2 eggs — Found two fresh queen cells one sealed and [illegible] in nucleus — had destroyed before and thought no eggs left — gave a [illegible] queen to nucleus to fill up combs to strengthen nuclei — this is as important as to make stocks strong — Must [illegible] [illegible] [illegible] nuclei — comb [illegible] eggs [illegible] [illegible] [illegible] (7) 40° [illegible] Slight frost [illegible] — found queen in cage dead — [illegible] [illegible] — found a sting upon her! Shall not give an unimpregnated queen so long as they have means of rearing queens — except they are taken from their brood — Found the young queen I left in hive that had 3 Q. cells hatched — found a [illegible]! out of [illegible] — beautiful queen — Nuclei made yesterday are rearing queen cells [illegible] [illegible] more queens with comb [illegible] — very little honey [illegible] [illegible] [illegible] ~~[illegible]~~ constantly in [illegible] black Italians stock — [illegible] many black ones on the wing from very strong old queen — Saw a few [illegible] [illegible] from [illegible] queen — handsome — bees working [illegible] — [illegible] [illegible] [illegible] — took out two end combs (one had some brood) and put in upper box — put empty comb in place — (have taken two [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] good [illegible]) As soon as the bees have [illegible] [illegible] the edges of their work [illegible] almost anything I have ever seen! Apple trees are [illegible] [illegible] [illegible] honey to [illegible] — [illegible] that I delayed giving [illegible] [illegible] [illegible] a few days too long — Hope if the season is good to get a hive of honey [illegible] [illegible] and perhaps a [illegible] from the [illegible] stock — Shall put on drone excluders — [illegible] I want the drones to impregnate shall shut up Purons and vice versa (8th) 44° — [illegible] [illegible] [illegible] — [illegible] [illegible] but not [illegible] to [illegible] — [illegible] [illegible] [illegible] strong hive — [illegible] [illegible] [illegible] nucleus [illegible] a [illegible] cell

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two [illegible] [illegible] in a few hours [illegible] two of them – fastened it again, given in to Nuclei to prepare – I have a considerable number of drones hatched in hive 90 (Italian this year) these very beautiful & average much better than any I have before had – These give two strip stocks honey boxes on upper story tomorrow – Hived another nucleus – found one to [illegible] think they have a fertile worker – Put some drones of [illegible] into a nucleus [illegible] – no Italian drones yet on the wing – (9th) 49° 70° – Decided white frost – beautiful day – bees work strongly – Hived three more nuclei – Removed old queen – set a nucleus in its place – bees seemed some to fly, lost or killed her [illegible] – many [illegible] next to each stock – [illegible], took out old queen – had a frame of hatched [illegible] bees – make two good frames of straight brood comb – got considerable honey – No Italian drones yet seen on the wing – [illegible] had one drone [illegible] hatched; Put an empty frame in my two highest stocks & [illegible] full [illegible] taken out above – In moving [illegible] back to old spot – set a nucleus outside of a large hive – they ran [illegible] into it to try make enough bees for another nucleus – took out [illegible] of nucleus hive from [illegible] – [illegible] (10) 44° 79° – Beautiful day – getting very dry – apple tree blossoms [illegible] Bees work very well – No I. drones yet seen on the wing – [illegible] yesterday [illegible] – today [illegible] at [illegible] the same – gave to a nucleus [illegible] and gave to nuclei Italian queen cells – Carried two nuclei with Italian [illegible] queen to Mr Peck – (11) – 56. 76 – Beautiful clear day – bees [illegible] considerable on apple blossoms – [illegible] very dry – (12) 46 80 – Italian queen [illegible] a little [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] seen [illegible] [illegible] – [illegible] [illegible] their place [illegible] nearly [illegible] – Made more nuclei – [illegible] – gave them bees from [illegible] – [illegible] – [illegible] [illegible] – [illegible] – [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] 12 [illegible] [illegible]

[illegible] in hatching — hatched [illegible] to [illegible] from an open cell —

(13) L. 63°. 76° — Slight shower with thunder last night — Strong South wind to-day — with some partially overcast — bees carry in water — worked very strong — Apple blossoms no longer show — In evening strong stocks [illegible] very much honey — seem to have too much [illegible] — 4 nuclei of Italian [illegible] Queen hatched — in other [illegible] —
Kept a number of nuclei with two adjoining queen cells in the house last night and examined them from time to time — but one hatched — remarkable — Find bees in these nuclei cluster very closely with a little smoke at night — only a bee occasionally leave the comb — [illegible] for care of examination — Take out only one comb from the nucleus — to keep it to home — Virgin queens drones fly in about 6 days — Last year drones first hatched on the 11th and flew on the 16th — they had probably hatched a day [illegible] noticed — [illegible] this year [illegible] to [illegible] in which [illegible] — [illegible] a few days that were hatched — Other drones have been flying ([illegible]) all the time — [illegible] the time that drones require (under the most favorable circumstances) to fly after they are hatched — [illegible] in flight [illegible] perfect [illegible] fully prepared for their office — Thunder at 8 P.M. — with [illegible] rain — the top of the ground very dry and baked — "[illegible] at top all there" — Rain at 8 P.M. a Cyprian have queen hatched — beautiful color — body (although pale) glowing with the [illegible] of an [illegible] — have opened an [illegible] — [illegible] in [illegible] — in [illegible] the bees [illegible] at the opening! Why [illegible] queen produces the most beautiful queen of any I have ever had — [illegible] not one from one — but one that has not been [illegible] before they were of an Italy Queen — the way to strengthen nuclei is to have several queens of hatching [illegible] to give them from nuclei that have fertile queens — give the [illegible] to a nucleus with queen or [illegible] queens to [illegible] — [illegible] the nuclei to [illegible] queen — [illegible] — (14th) 46° 62° — Cloudy with some rain — Cool wind E. — [illegible] with considerable [illegible] more inclined to rob — the G.H. queen [illegible] hatched last night — rather large and beautiful — Cyprian 3 hatched out a very fine queen — My G.H. queens are more beautiful than [illegible] I have [illegible] the Italy queen — Saw another queen [illegible] — [illegible] I removed the hatched queen — Removed two [illegible] queens and [illegible] — [illegible] the [illegible] — they are [illegible] — bees [illegible] — In a [illegible] not [illegible] — [illegible] — To give queen cells nearly ready [illegible] the best way [illegible] to [illegible] —

242 [illegible] 1878 — (15th) 52° — Beautiful day
[illegible] on uplands yielding nectar — Removed Italian queen and gave G.D. [illegible] — [illegible]

Saw no Italians!! They were very busy on the flowers — Saw a number of Italian drones from the Hutchins queen on the wing — they are just [illegible] very [illegible] — [illegible] from my [illegible] queen (bred by the [illegible]) [illegible] that queen — they [illegible] good [illegible] Three days of a [illegible] — there [illegible] to fly — [illegible] queen [illegible] [illegible] found [illegible] the [illegible] queen [illegible] — Saw a [illegible] queen from Hutchins queen — [illegible] fair for color — [illegible] queen hatch — [illegible] not so fair — the [illegible] very good — [illegible] so they [illegible] the [illegible] — as they [illegible] [illegible] — [illegible] very [illegible] — (16th) 52° 76° [illegible] East — beautiful day — changed [illegible] from old [illegible] to the new [illegible] — [illegible] [illegible] queen [illegible] queen [illegible] [illegible] queen [illegible] queen which [illegible] from a [illegible] [illegible] — [illegible] very [illegible] [illegible] a three [illegible] [illegible] [illegible] Italians! [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] — Saw [illegible] [illegible] [illegible] [illegible] — the [illegible] of the [illegible] [illegible] the [illegible] — [illegible] queen [illegible] [illegible] — [illegible] [illegible] [illegible] — [illegible] [illegible] — Queen [illegible] in the [illegible] — [illegible] [illegible] through the [illegible] — [illegible] included. [illegible] queen [illegible] [illegible] (17th) [illegible] 78° very warm beautiful day — went to Hamilton — [illegible] [illegible] — [illegible] very [illegible] — [illegible] [illegible] — [illegible] [illegible] a year ago — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] — the [illegible] for [illegible] [illegible] — (18th) 62° [illegible] 9.5 [illegible] [illegible] (19th) [illegible] queen [illegible] [illegible] [illegible] for color — [illegible] [illegible] — Saw two [illegible] queens — [illegible] [illegible] — [illegible] mother — [illegible] [illegible]

Light. I have just found out May 25th 1851 that bees can be made to work just as well with a full exposure to light as in the dark + I have removed the ~~doors~~ shutters from my double observatory and find that in a short time they do not mind the light.

I ~~have~~ had two observing hives in full operation during the summer of 1851 the bees were exposed to the full light of day - they worked with great diligence in the main hive and in tumblers and did not appear to be at all molested by the extraordinary amount of light to which they were exposed - All the operations of the hive were constantly exposed to full view - the Queen exhibited not the least shyness - but might be seen at almost all hours of the day laying her eggs surrounded by her ~~affectionate~~ children -

1852
June 9th - Numerous experiments show me that great care must be taken in putting a swarm into an obs hive and exposing them to full light - in many instances they have abandoned the hive - even when their Queen was wingless - Queens reared in full light do not seem to mind it at all -

March 11th 1868 Thin lining? Dr Hamlin - and others [illegible] a board to [illegible] of the side of hive, [illegible] against [illegible] side edges - to form an air space to be filled in in winter with straw &c - A good plan [illegible] might they not [illegible] even [illegible] in Reading [illegible] - adapted to the frost - Care would be needed not to have these fillings get wet -

Linden - or Bass - The European tree worthless for honey - infested with worms and not near so beautiful as the American - which yields abundant supplies of a nice honey - It ought to be extensively cultivated as a shade tree and ornamental -

Lighting of Bees - Caught wingless Queen when bees swarming - in two instances - The bees had not lit anywhere - put them on bough of a low evergreen - In each instance in a few moments the whole swarm came to them and clustered around the twig -

Life of Italian workers - Duration of -
September 14th - 1866 - Mr Adam Grimm of Jefferson, Jefferson County Wisconsin (Correspondent of the Bienenzeitung) - furnishes me the following facts as to length of life of Italian worker bees - August 1st 1864 introduced a probably mismated Ligurian young queen to a good stock of black bees just deprived of its queen - In January 1865 - examined the stock - found capped drone brood (hunchbacked) in worker comb - reared little drones up to the 20th of April having then drone brood in three combs - It was then transferred from the old box to a [illegible] hive and a sealed Italian cell given to them from another stock - The queen hatched so as to become fertile May 6th = At this time there were no black bees left in the stock - but only the hybrid workers which the ~~young queen~~ mismated queen had produced before she became a drone layer - The stock was strong enough to raise brood in four combs from this second queen - the brood in the two outside combs being about the size of the hand - (length of slats about 16 inches - depth ten inches - This stock recovered so rapidly that it threw a fair swarm on the 11th of July and after swarming filled its hive - ~~At same time of August 1st 1864~~ (October 15th of 1864) he introduced to another good black stock just deprived of its queen an Italian queen - which in spring (March) was found to be a drone layer - never having produced workers - this colony had a new Italian queen cell given to it the same day with the one first mentioned - which hatched and was impregnated the same day with the other one - This last stock had dwindled down so much that it could only cover two small pieces of brood in two combs - and it did not become strong in numbers until the close of the summer and has not now filled its hive as well as the one first mentioned which swarmed - Samuel Louder - William [illegible], and John Rossler of Jefferson can testify to the above facts -

as found him — since very poor — Robbing at V. G. The Italians have a few eggs,
too [illegible] few bees to work much — all the better as [illegible] most weather now —
(20th) 46°.. 56° Wind N. E — beautiful rain at 12 M. — Yesterday a few Locust blossoms
not ready in the village — All of the stocks I have in my hive are now in prime condition —
When Locust comes will be ready to work with power — shall give them all a second
story [illegible] [illegible] [illegible] — (21) 62° — Very rainy last night — heavy thunder
And lightning — wind changed to S. W — after [illegible] [illegible] heavy rain — then cleared
at noon. Cleared off — strong wind — Several of my Y. I. Qs are fertile — Locusts
will soon be in full bloom in the village — The heavy rain excellent for clover —
With fair weather a great promise for honey — The wet and cool weather giving
the queens an opportunity to fill up cells of hatching brood with eggs [illegible]
[illegible] the [illegible] — (22) 46°.. — Beautiful day — Found one of my very best
[illegible], [illegible] [illegible] ([illegible] [illegible]) — A beautiful Purely queen [illegible] in a cage
killed! [illegible] [illegible] too [illegible] — Opened a hive which had a fertile [illegible] here
queen [illegible] [illegible] and a Rockland (Rose) queen [illegible] [illegible] — [illegible] of the
queen [illegible] drone brood! The Y. Q. had just returned from drone — part still
extending — anxious to get rid of it — a friend saw a bee try to pull it off [illegible] [illegible]
another succeeded! Examined the colony to which I gave the Yellow [illegible] [illegible]
from this one — had some [illegible] — had cells from which drones have
hatched quite full of unsealed brood! had also worker cells with eggs
and [illegible]! This [illegible] to the instance [illegible] in my book — She was
[illegible] [illegible] [illegible] [illegible] to [illegible] her [illegible] the [illegible] drones hatched —
She was given hatched Apl 26 and to a colony May 12th — She had plenty of bees and plenty of worker combs
[illegible] [illegible] had just hatched some [illegible] than the drone comb in which she
was [illegible] — (see Record of Hive No 57) A very fine queen from [illegible] [illegible]
the best drones is fertile — shall raise queens from her — She has in all probability
[illegible] with a Rockland (Rose) drone — as [illegible] few [illegible] drones have hatched in
the [illegible] [illegible] — [illegible] drones from [illegible] queens of 1850 [illegible] [illegible] [illegible] with
[illegible] Yellow [illegible] ~~queen~~ drone [illegible] [illegible] [illegible] — Found a queen hatched whose
cell was inserted on the 15th — She had killed one queen — inserted 6 — the [illegible] I
have seen yet — all the Y. Qs hatched lately not so fair — [illegible] [illegible] depend some
upon [illegible] of [illegible] — [illegible] several of my [illegible] Y. Qs had [illegible] [illegible]
[illegible] [illegible] [illegible] too often [illegible] this — (23) Wind N. E — cool — Locusts are now
[illegible] [illegible] in the village — bees get [illegible] from them but little
honey — Delay has caused a very heavy laying of eggs in the cells vacated
by hatching bees — this gives heavy supply of [illegible] for [illegible] — [illegible] [illegible] [illegible]

o L

queen reared from [illegible] sent me by Rose — they are not near so good as the Imported ones
in the Glass hive's — shall not use them — Received queen from G. D. but put her in a Nucleus
of her bees to be able to get brood for new queen — put in queen [illegible] — The colony
was a large one of [illegible] hive — which will go to other colonies giving them a [illegible]
Italian queen — When done will remove this colony and as the [illegible] — first test if
not always safe to give sealed queen as soon as old queen is removed — should wait till
they begin queen cells — [illegible] G. D. that had been in cage 24 hours — bees did not
like her [illegible] — [illegible] her — used chloroform but they [illegible] her [illegible] — put her again
in cage — I want two more strong nuclei — (24th 52°, 66° — Cool wind from E, bees get
very little honey — Found queens in double wire cages not noticed by bees — see
[illegible] — [illegible] put in single cages bees [illegible] upon them —
Omaha [illegible] three strong nuclei — I think best — though queen cells [illegible]
ought to have been shut in — Find my G. H. [illegible] with
very great difficulty squeeze the queen [illegible]
common [illegible] cages — In opening a hive [illegible]
with drone eggs — two days ago — the [illegible] young — saw her [illegible] her hive
[illegible] about the [illegible] and [illegible]
[illegible] the queen [illegible] at that time — A nucleus with
honey was not rearing queen — I [illegible] two [illegible]
they were fertile — have queen cells rearing from one — I want at least
50 nuclei — and shall try to get them all so strong that they
gather honey [illegible] — (25th) 40°, 65° — [illegible]
[illegible] — [illegible] began to smell and bees got honey (26th) 43°, 70° — [illegible]
active [illegible] — but [illegible] not [illegible] in honey — [illegible]
3 queen [illegible] fertile [illegible] queen — [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] — [illegible] the same [illegible]
to the [illegible] — Removed a queen [illegible] of [illegible]
queen — [illegible] — [illegible]
my three queens [illegible] — [illegible] equal to the [illegible]
[illegible] — A fertile queen in a cage [illegible]
with very few bees [illegible] and [illegible]
[illegible]
[illegible] — I [illegible] queen [illegible] yesterday — she had been in cage [illegible]
[illegible]

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there were stocks coming on — though bees had unmated queens! The hive would have swarmed — One did as well [illegible] Langstroth — also the Mother — each retaining a black queen — queen cells ought always to be saved for some few days after queen's [illegible] — Seems very beautiful of the Italian queen for [illegible] not found in the mother — [illegible] made a [illegible] with

frames [illegible] admirably — the thing — have one almost black queen from G. H. queen — Am satisfied that my drone laying queen — after [illegible] — was impregnated by a black drone when she laid these drone eggs — (see Baldridge in Bee Journal) — [illegible] lost the laying queen — the fact that if impregnated when she laid these drone eggs it must have been by a black drone — [illegible] of the queen to be pure [illegible] she did begin drone laying before impregnation — Have used the [illegible] with much success to-day — Bees very busy on white clover — White clover begins to [illegible] [illegible] — the bees [illegible] the [illegible] — [illegible] this season [illegible] full of bee-bread — (27th) 58°. 78° — Bees wonderfully active on Locust — nearly every cell filled [illegible] — [illegible] are now overflowing with honey — [illegible] a queen given 24 hours [illegible] — that [illegible] 12 hours longer [illegible] — the colony had queen cells begun — an old queen [illegible] in a cage and [illegible] with [illegible] [illegible] queen cells — [illegible] eggs [illegible] queen cells — Think that [illegible] activity the queens not so well developed or so well colored — Used compound with advantage. Heavy thunder shower at sun-set — Think that a thousand [illegible] bees might have found enough in [illegible] Locusts — [illegible] — Opinion as to the "[illegible]" [illegible]" (28th) [illegible] bees making honey — [illegible] Locust [illegible] Hive examined to day shows that every cell occupied — Gave a few days ago [illegible] queen cells to [illegible] having a young queen — the bees [illegible] — Used compound for [illegible] 29th 48°. 70° — Hard early [illegible] — [illegible] not so [illegible] —

day queen hatches — very abundant — saw bees on white clover — clover is now in blossom —
Used confine for opening hybrid Italian u — did well — Gave queen with the L
confined to a good stock of black bees as soon as I took their queen — they confined
her but did not hurt her — put her for half an hour in a cage — they confined her —
kept her in some for a few hours — took her out pleasing — Only 1/2 loaded
old bee is very heavy and fearful but — Italian three hundred many of them are
getting out — [illegible] so [illegible] bees more inclined to rear queens —
(30th — 62° " 82° — Great day for honey — Bees in nuclei fill all up, [illegible]
stormy cut out all the eggs — Italians now with queen cells — small queen
fertile — Safe in this warm weather giving queen on the honey board — can see
her when she leaves cage — all I leave 36 hours if they accept her — I now
that bees below were full up too much — Place left up in some three
or four cards into second story — can use these in helping swarms — (31) 68° —
84° = Splendid for honey — Locusts plenty abundant — Sweetish clover — bees
upon — Put [illegible] number of frames (three) from lower part of hive into second
story — bees have filled up very [illegible] honey — Let out a pullet Italian (she
laid only a few eggs in the nucleus) after 36 hours of confinement — she was penned in
too much — took wing — and away bees — penned in again — put in cage — six hours
longer. Then welcomed by bees — A hive which had an Italian queen in the
29th threw a good swarm — found two sealed queen cells pure unsealed! Removed
them and gave returned the swarm — Saw no eggs in cells — At 5 P.M. a very
heavy gust — strength of it went north — very heavy — rain has fallen gently
nearly every day for over 4 hours — Starting [illegible] — Much other rain —
(June 1st ~~80~~ " 86° — In P.M. heavy gust with hail — Hail on the ground
after it fell — a hail stone three inches in circumference was picked up —
Much rain fell — Hive with four nuclei blown over — all but one tumbled
out — one had an Italian queen — found her after the shower in the grass, [illegible]
of her bees — [illegible] all up with but little damage — Friends [illegible] under
heavy showers — ground very full of water — Had a swarm of bees from a stock to
which an Italian had been given for a few days — hived it just before the
gust came up — Old stock had no queen cells — the usual number of Ita
remained behind — all natural, absence of queen cells except ten — (2nd) —
Variable but beautiful weather for bees — white clover very abundant — plain seed
of weedy much — but bees thick upon them — Examined a stock to which a
number of queen cells had been given — all destroyed — until a few days ago when
two or three were not hurt — when others away one hatched and killed the others —
This stock a few days ago had an impure Italian queen not handsome —

M ailing bees – see Journal Feb. 28th 1879 – a

Mater Regia
Queen – Huber maintains that without fecunda° there will be no eggs laid by the Queen

Dzierzon that Queens can lay drone eggs without fecunda° – Huber asserts that if impregn° be retarded for a certain time – the Queen can only lay drone eggs – May not the sack or seminal vesicle of the Queen from some cause be incapable of being filled – if fecunda° be delayed beyond a certain time? This can be established by dissection – In this way ~~both~~ these writers will be substantially reconciled – with this exception that Huber's opinion that fecunda° is required to lay the eggs of drones will not stand – the facts as detailed in his observations are not inconsistent with my supposition – Dzierzon himself maintains that unfecundated Queens very rarely lay any eggs at all –

Experiment – By my ventilating divider several queens may be made to occupy the same hive – after they have been in the hive some time – they may be allowed to intercommunicate without any risk of quarreling – we may thus determine whether two or more Queens will live in the same hive – where the combs are not kept quite distinct –

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Drone Eggs – It is certain that the Queen knows what sex the eggs will produce before she lays them – if she can know this – is it more difficult to suppose that she knows it because of the way in which she chooses to extrude them? this will make it easier for her to know – We know that in the Aphides one impregnation will last for several successive generations – The same facts have lately been observed in other ~~[illegible]~~ creatures – The egg that produces a Queen is impregnated – the virtue of this impreg° may affect the ovary of the bee so that her eggs may have vitality – and yet an impregn° of this bee may be necessary to enable her to produce young as highly organized as workers – This will account for fertile workers – This can be determined by careful experiments (1) Let a number of hives be deprived of Queens – when royal brood sealed – take all but one – put her by gauze wire so that she cannot get to bees – take off her wings – see if any eggs laid – and what kind – after trying restore perfect Queens – (2) In every Hive with Movable Frames watch for Queen laying eggs in drone cells – remove – touch part of them with pencil dipped in semen – restore – (3) Do same with eggs of a Queen whose impregn° has been retarded – (4) Same with unimpregnated Queen laying drone

Mater Regia — Queenlessness— This is a very common and a very fatal calamity— If it occurs when there are drones in the apiary it may be remedied— If at any other time the hive should at once be broken up— Unless it is a very good one and it is judged better to ~~take~~ give it the Queen of a weak colony— Hives are very apt to lose their Queens in swarming time— especially those which contain young Queens which must leave the hive for fecundation— The apiarian should keep an eye on all such hives until he is satisfied that the young Queen has commenced breeding— Hives without a Queen soon fall a prey to the moth and often endanger a whole apiary— by the legions of moths bred in them— Hives with bars enable the apiarian easily to ascertain whether a fertile Queen is present—

Age of Queen— It seems to be well established that after the second or at most the 3rd year— Queens fail greatly in breeding— As a general rule every colony should have its Queen removed and its place supplied with another a Young One— every third year— Dzierzon thinks that the Queen generally perishes in her fourth year— If so as many non-swarming hives prosper for a much longer time she must usually perish when the bees are able to supply her loss—

Queenlessness— When the bees first discover the loss of their Queen they are greatly agitated— They usually fly out from the hive as though they were intending to swarm and rush in and out of the hive in platoons— and many of them enter the adjoining hives— When a hive is idle when others are busy— especially when it is observed to be carrying in no bee bread— the Queen is probably lost— Queenlessness is annually the cause of the loss of many colonies whose decay is often attributed to the moth or some other cause

Mater Regina Catching — In my barred hive by removing bars one by one — If the bees are all driven out into an empty box she may be caught by shaking them on to a sheet — Suppose a small box was placed on the sheet will she not go with a small portion of the bees into it? She might thus be very easily caught —

Huber and Dzierzon — Huber's Queens whose impregna'n was retarded seem to have been very fertile — Dzierzon says that but few Queens whose wings are defective and who are not able to leave the hive to be impregnated ever lay any eggs — he thinks that unless impregnated Queens are seldom disposed to lay eggs — My theory is that after a certain time has elapsed — the Queen altho capable of copula'n are not capable of impregna'n — that copula'n is ordinarily necessary to the stimula'n of the ovaries to egg laying — My theory will reconcile all the discrepancies between the two —

Medicine — Poison of bee used extensively by Homœopaths — Old writer in letters My Bee Books speaks of bees for stoppages — a powder of dried bees — Dunglison's new remedies — a dozen or more bees with hot water poured over them — the tea used for strangury in pregnant women — (Cure for men — vaccination — bee poison)

Mater Regina — palace — May 6th — 1852 — Have to day contrived the block with a= partmt for queens — to go into the hive —

May 30th — 1852

Catching — shake on to a sheet some distance from the hive — start a few for the hive — then let them crawl so that they may be seen — Queen in this way may be found — and if of a first swarm her wings may be clipped — June 1st — 1852 — Am disposed to think that if new brood be given for Queen raising after the first attempt — more will be raised — have noticed that first lot seem often to fail —

R. Socy

Impregno of Queen. Arthur Dobbs - (Vol. 10 - Phil. Transac. Abridged) advances the idea that the semen of the male may be lodged in the vesicle figured by Swammerdam - and emptying into the oviduct - which Swammerdam thought was intended to secrete the viscous fluid for sticking the eggs to the base of the cells - Hunter Vol. 17th - advances a similar idea - and supports it by reference to his experiments on silk worms - (Jano 29th 1852.) Dr. Leidy dissected to day a Queen bee - I took her from an decaying hive which had become very much reduced in numbers - She accompanied a first swarm of the preceding season - and came from a hive which had swarmed the year before - she had therefore presided in a hive for two summers - The stock of the hive had been unsound - all the summer - there were no drones in it early in August - the bees having killed them all off - The ovaries of this Queen were well filled with eggs - but they were not as much developed as those figured by Swammerdam his were examined when the Queens were laying - this when she was not - The poison bag with its ducts and the sting were examined - these ducts were larger than those in Swamm= the bag did not contain any acrid matter - but it had been immersed two hours in the water before it was tested - The most important point in the dissection was the complete demonstrao of the sperma-theca - distended with the spermatic fluid - Swammerdam figures it as a sack for secreting a viscous fluid for attaching the eggs - it is much more reticulated than in his figure - internal cavity of the sperma-theca about the 1/33 of an inch - It was surprising to see how large a quantity there was of the spermatic fluid - It was seemed to be impossible that it should all be contained in so small a sac - The spermatozoon were [illegible] - [illegible] unfolded was measured and found to be - Length 1/350 of an inch - Breadth 1/7000 } Not a trace of an ovary could be ~~diffe~~ detected in the common worker - Dzierzon has advanced the same notion of an impregnated sperma theca - and says that he has often dissected it and found it full of the seminal matter - but he says that the Queen has no poison bag - and suggests that this may be changed into the sperma-theca - so great a mistake tends to bring discredit on his skill in dissecting - besides all this he speaks of the resemblance of this fluid to the semen of the male - he does not seem to have subjected it to a microscopic examination - this shows at once the spermatozoon - and demonstrates that it is filled with semen.

Feby - Dr Leidy has examined two more Queens - raised artificially last Summer - Sperma-theca - full in both -

Missionary. interesting address to. upon various topics connected with a missry duties. (R. Hall. Vol 1. P 159.)
Minister Christian. his general calling as a Christian and particular calling as a *man*, perfectly coincide. (R. Hall. Vol. 1. P. 162)
Ministry. in what sense independant of the people (Spir. Desp. P 113)
Ministers, present disparagements of. (Spir. Desp. P. 279.)

April 9th 1852 — I am disposed to place my plan for rearing young Queens as next in importance to movable frames — The removal of the old Queen for one week will give time for sealed young ones — her removal for so short a time will be of no serious detriment to a strong old hive — When hives swarm let all the sealed young Queens be at once removed — and a young hatched one at once given — This will save a week or more of precious time — prevent second swarms — and put the hive [illegible] much in numbers — Then in about a week all the eggs left by 1 Queen will be hatched — sealed — and bees may be moved for any purpose. It is a interregnum that makes this work —

June 8th — Plan to have fertile Queens on hand for A.S. — Have a natural swarm brought to you — in say four or five hives have a frame with brood or A.Q. — shake bees on sheet in front of a hive seeing Queen — let her enter with a nucleus — *spread* the rest to the prepared hives. They will form a nucleus — raise Queens — and be fit for enlarging —
June 9th Take frame with bees and brood in right state — shut up in a separate hive with honey and water — ~~when~~ in two or three days when Y.Q. fairly under way give liberty — use such combs in making A.S. —
" Take a hive with say a dozen frames each containing Y.Q. — say 10 or 12 days old — to a place where bees are cheap — from each frame make one by catching up — have of course ~~empty~~ frames with combs — say six for each hive — or else put guide comb on frames

Queen-1

Mater Regia - April 2. 52 - Plan for keeping on hand young Queens without weakening hives in which they are raised too much - Take away Queen from A - ~~Put her with some bees and comb in B~~ - and B to make an Ar. Swarm - Take them five or six days apart - When young Queens in A are sealed over - remove for use - give them a Queen from C - as soon as she has filled cells with eggs - take young Queens from B - put same Queen in B - as soon as cells filled take young Queens from C - put same Queen in - in this way each of the hives may be made to rear young Queens all the time and yet not be too much weakened - They will probably rear many more than on any other plan - Young sealed Queens taken away may be kept in warm place - might be put in a little box and kept under a setting hen - or in box kept in the hive - or the cover way do - This plan in substance seems to me to be a very valuable one to those who wish to have artificial swarms - Begin in April - so as to be sure of there will be drones arising - Each hive might be calculated on for at least two Queens every two days - Begin say 10th April - 5 Queens in April - 8 Queens in May - 4 in June to 10th - from 12 to 20 Queens - may be had from one hive - and yet by the perambulating Queens the hive will not be too much weakened - It will then have time to flourish with its new Queen and to become strong - Three hives might supply Queens for 50 Ar. Swarms - vide Page 3 - April 8th - Let unhatched Queens be put under tumbler with a hundred or so imprisoned bees - comb in tumbler - double tumbler - kept on hand for use - (E. D. S. - Put into a hive deprived temporarily of its old Queen to be impregnated) S.S.S. - Impregnated Queens used for new colonies - others put permanently into the hives from which impregnated taken - This will dispense with Queen [illegible] be and wonderfully simplify all the business of artificial swarming - A great idea born to day (Then tumbler might in cool weather be kept in a warm room - or placed over a warm hive - The taking away of an old Queen to be replaced by a young one need not cause much delay - If the young one is not given for some time they will rear others - when these are sealed young ones given in their place - No particular hives needed on this plan for Queen rearing - though it may be best to have such - (See preceding page)

Mosaic Institutions not arbitrary but strictly philosophical (Withington Xian Rad. in 8 10.31

Moth-Bee. Not a native of this Country— When Bees were first cultivated there were few if any moths— all that was necessary to obtain honey— was to hive the bees in anything hollow— and to let them alone. But these moths have multiplied so much that now bees cannot be cultivated without care— When there were no weeds corn was raised with scarcely any trouble— not so now— "My father kept bees and had luck— but with me they have all run out." Explain why— Moth proof hives— are humbugs— wherever a bee ~~moth~~ enters a moth will be able to enter also— closing the hives if it could always be done at the right time might prevent— but this not possible. Proper mode of guarding against the moth. Moth Traps useless traps— ~~Fr to~~

Hatching— Put a worm ready to spin into a tumbler April 24— Kept in a room from 55° to 70° hatched May 5th—

Shutting up the hives will not answer for several reasons (1) Entails too much care— the apiarian must always be on hand evening and morning— few will do this for any length of time— (2) It renders the bees dissatisfied— It is their nature to run out on the board and you cannot go against it without serious annoyance to them— (3) The moth is known to fly and enter the hives to

some extent—even before sunset—and in the cloud
day—(4) It certainly flies long before the bees
have returned from their labors— The truth
is that any strong colony in almost any kind
of a hive will protect itself from the moth—
When a colony is greatly reduced in numbers
or has lost its Queen it is almost impossible
to preserve it from their attacks— The
best way of defence is to have narrow entrances
(you do not depend upon these for ventilating
in hot weather), to have a suitable moth
Moth Trap. and worm trap on the alighting board and
near the entrance into which the smell and
heat of the hive penetrates and from which
the moth cannot gain admission to the hive.
In this trap should be kept a piece of
old comb as a place of deposit for their
eggs— This with any reasonable amount
of care will be sufficient not to entirely exclude the moth but to prevent them from ever
seriously injuring a hive.

Increase of— If we depend for our increase entirely
upon natural swarming we shall be
very anxious to save small and late
colonies— Such too frequently become
moth-breeders for the whole apiary.
Ordinary hives may become Queenless
or have barren or superannuated ones
without its being known— & moths
will then invade them—

Moths — Poor hives and bad management the cause of their great increase — When bees were kept in 1 old fashioned way, and all weak colonies taken up in 1 Fall — more profit was realized than from most of the patent hives + good hives and proper management the great preventives to moth breeding =

Queenlessness — When the hive is without a Queen or 1 means of raising one — usually they make no resistance to 1 moths and worms — A hive in such a state unless it can be relieved cannot be protected against the moths — The loss of the Queen 1 occasion of all its woes —

Excessive swarming — When a hive is so much weakened by swarming that they cannot cover all their comb it is in danger of being attacked by the moth — Such a hive ought to have its entrance contracted — and its ventilation so regulated that the bees will not from being too cool be obliged to withdraw from 1 entrance. All hives feeble in numbers shd be managed in 1 same way — As soon as the moth has fairly got the upper hand, in all ordinary hives there is no remedy — the hives shd at once be taken up or they will endanger the whole Apiary — In hives with movable bars — the combs may be taken out and the worms destroyed — and thus 1 colonies may often be saved. Non-swarming hives are seldom much annoyed by the moth — the bees are sufficiently numerous to protect themselves — and so long as they contain a fertile Queen they are safe. As the moth are on the wing often long before the bees have returned home and in dull days at all hours of 1 day, it will be seen that no dependance can be placed upon shutting up 1 bees at night to preserve them from 1 attacks of 1 moths — the Use of my moth and worm trap by which the moth is enticed to lay her eggs and 1 worm to wind its cocoon outside of 1 hive so as to be easily reached, will be a great safe guard — but nothing will protect 1 careless Apiarian who tolerates Queenless colonies — from 1 ravages of this insidious foe. One such colony will often lay 1 foundation for 1 ruin of a whole Apiary — Every hive wh. professes to be moth proof will in 1 end disappoint 1 expectations of all who place any confidence in it — If but one moth enters (and the bees of a queenless hive offer no opposition) she will lay eggs enough to cause the ruin of the strongest colony in a very short time — My movable frames allowing each comb to be easily taken out and examined so that they may be cleaned from the web and worms of the bee moth will enable ~~some~~ the Apiarian to save hives badly attacked and which would otherwise perish —

Rapid increase of colonies — A system of management which will enable us to increase our colonies with great rapidity — will be one of the best methods of contending successfully against the moth. While the taste for their cultivation has rapidly increased the difficulties of multiplying colonies have also increased — A good swarm of bees when it leaves the hive is ordinarily valued at about four dollars hence the great anxiety to preserve even weak old colonies — Natural swarming being so uncertain — and no system of artificial swarming as yet introduced into this country being of any practical use, and the ~~just~~ unreasonable feeling of unwillingness to destroy any colonies in general having been so strong (how much humanity in leaving them to starve — or to perish from the moth — and cause the ruin of other colonies?) — all these things ~~aid~~ favor the increase of the moth — until in the warmer parts of our country where the seasons are longest and most favorable to insect development we are in danger of having the bee exterminated — Let my system of management be introduced — and the price of swarms will speedily fall — persons will also engage in raising of swarms on a large scale for sale — and the temptation to waste time, patience and money — or its equivalent honey — upon feeble swarms — or moth breeders will be taken away — But if bees are kept on my plan such colonies may be strengthened at the right time — by brood and honey — and all queenless colonies being supplied with queens or if the absence of drones will not permit this being taken up — we may bid defiance to the moth —

White — I find many practical writers object to this color as attracting the moth — a pan of milk will catch them — white dishes with honey and vinegar — good — there can be no doubt that white attracts the moth — (Hive cleaning) — Every Spring the frames of each hive may be put into another hive — the old one most thoroughly cleaned — all eggs of moth eradicated — and any little repairs made — then the bees may be returned — this may be done at any time if the moths have got in — this one crowning excellence of movable frames —

Moth — Many infallible remedies!! Care in almost any kind of hive —

Larvae of Moth — (April 8th 1852) Do not think that they will be able to climb the sides of glass hives —

(April 5th 1860)
Drone eggs how to rear Queen from — A friend has a virgin Italian Queen — she lays no eggs yet — he has no other queen — If she lays eggs — he can get a pure queen impregnated thus — When she has produced hatched drones — (which will be pure Italians) let him watch her laying — (say in an observing hive) remove comb before shell of egg is dry — impregnate artificially — give these eggs to some bees having no queen — let them rear a queen — she will be pure — then let her be impregnated by her brother drones — and the thing is done — would be one of the most beautiful experiments in the whole range of Natural History — possible — and had I time I could do it —

Nuclei for rearing Italian Queens — State of this day —
May 22, 1861 —

(I). At Dr Hills has four sealed Celanaine queens — one sealed when queenless yesterday — the other at noon today — the bees from my best Italian —
(27th) Cut out two Q.C. — and removed all the bees to make a [illegible] — (28) Brought home — 30 Queens hatched — taken away — put [illegible] — another hatched and given to Stock [illegible] (5) — gave them another sealed Q. Queen — (31) Gave Celanaine Q — and took away sealed queen —

3 Sw — queened } Found a beautiful large Italian — comb full of brood ready to seal and eggs showing that she had been in hive some time — think that she is the beautiful queen I missed 11 days ago — Found a swarm and set old stock in place of a stray stock — Made two other artificial swarms — One from an old box (2 1/3 bushels) full of bees — queen quite slender and small! At once queen can lay then as many eggs as a large crop belly — (3rd) 64°. 72 — Rainy — wind S.E. —

(II.) May 22 At Dr Hills has two unsealed Celanaine Q. Qs — bees from my best Italian — (23rd) One sealed today — (24th) Other sealed — (27th) Removed one queen cell — (5th) Put home — Took away 2 Q. cells and gave them one from my [illegible] — (June 3) ~~Queen hatched and removed and [illegible] queen to [illegible]~~ — Wind N — Now N.E. — much rain has fallen — Queens have a good chance to fill in with eggs — never saw such a profusion of white clover — if weather good bees must have a splendid pasturage — Let out a queen confined for about 30 hours — bees cupped her but did not hurt her — shut her up again — Made two nuclei for Cleaving's hives in my Hill — (4th) 65°. 70° — Cloudy — wind strong N.E. — bees out but little — Made two swarms — Gave Italian queen

(III.) May 22 Has one unsealed Celanaine Italian — (2[illegible]) [illegible] — very small — that
27) Put many bees to it — [illegible] from hive — (28th) Took [illegible] them for an [illegible] nucleus — (31) This hatched a beautiful [illegible] queen — gave her to No. I

to Mr Hessells hive at Dayton — Found a swarm — cut out drone comb [illegible] queen — fed — accepted — Made another swarm for him — queen not found out — Had another beautiful Glossy hive queen hatched — think that these were under favorable circumstances large — better — cut out from hive all [illegible] number of unsealed and one sealed queen — noticed the great superabundance of royal jelly — have seen much less in most of my small nuclei — Cell from which beautiful queen hatched closed up again — old cap cemented first — noticed same once before — June (5th) — 56°. 70° — Wind [illegible] E — some sprinkling of rain — At noon much warmer and bees began to get

May 22

N ~~(IV.) Has two sealed Italian queen cells. one yesterday - [illegible]~~ e
~~bees from the hive - (23rd) an Italian cell [illegible] - [illegible] bees there~~
~~came here - (24th) came from comb with bee-bread taken from my 2nd 2 [illegible] - (27th) Cut out one Q.C. - (29) Q.~~
~~hatched this a.m. - (5th) Queen lost - gave Italian brood -~~
honey - The hive which swarmed on Saturday - and had queen cells destroyed - swarmed a-
gain to day - had two queen cells - returned queen and put in Q. C. - [illegible] as
swarm - did not get queen - prepared them with one of my best queens from a nucleus
till I could fix them out - Three I. Q. C. hatched to day - one very mouse coloured - the
another beautiful - another, when just hatched appeared to me to be the most beautiful
I have ever seen - all large - the last two from a G. [illegible] queen that left after being

May 22
~~(V.) Has two unsealed Italian queens. (23) one sealed - (24) the other sealed - (27)~~
~~Removed one Q.C. - saw a large one fairly like [illegible] - [illegible] to them - (29) Gave them I. Q. to~~
~~[illegible] (4th) - Gave them hatched Q. Q. from (VIII)~~ unfertilized and [illegible]. I. Q. [illegible] I found in
another hive - Examined hive which had a handsome I. Q. that lays at first as
drone layer - found much drone brood - in [illegible] after this drone comb like a [illegible] queen - some
in worker cells, scattered - worker brood scattered - one comb regular with eggs -
two but little room for eggs - combs nearly all full of honey or bee-bread - Two queen
cells - one sealed - removed queen and the sealed queen cell - put queen in a nucleus
to test her - Since weather has been very favorable for breeding - and the queens have
~~(VI.) May 24th - Has unsealed queen from (5th) - (27) gave sealed Q.C. from (IV) (29) Removed I. Q.~~
~~cell - and gave to stock - has 4 queen cells unsealed from my [illegible] queen - (30) Two sealed~~
~~to day - [illegible] to Dr Hills - (June 3) Cut out [illegible] 2 cells [illegible] - [illegible]~~
made the most of it - (6th) Two colonies in hives with patterns deserted - returned
them and put some comb in hives - in one used only 4 guides and two frames - Hive
has swarmed a number of times (60) swarm and the swarm put in a new hive -
Mouse coloured queen very dark - the most beautiful one not so highly coloured as
some - yet another very dark queen - both from queens reared from [illegible] queen -
Am putting on the outside of my hives a good worker comb to be filled with honey
~~(VII.) May 24th - Has brood - some eggs [illegible] Queen [illegible] to Dr H. - [illegible] from my 2nd [illegible] -~~
~~(27) Gave sealed Q.C. from (V) Gave 4th Removed both queens [illegible] - gave [illegible]~~
[illegible] certificate [illegible] I [illegible] used to [illegible] stocks [illegible] in [illegible] - (7th)
52°. 74° - Clear - strong N. E. wind - bees work only moderately - A swarm with frames
and no comb deserted - hived and no comb given them - Made 3 A. swarms - Found
Hardened combs in cellar full of worms - Took queen from a Art. swarm where
they [illegible] her gave I. Q. in a cage - in a few hours let her down - all [illegible] -

~~(VIII) May 27th – Made of bees from I. one two sealed cells – (28) One Q.C. – unusual hidden~~
~~it had no [illegible] but in extension – queen hatched at 2 P.M. – gave to 6 (V)~~ N
and ~~put~~ in ~~sealed queen from cage No (1)~~ ~~(June 4th) Removed fine queen – and gave [illegible]~~
~~hand~~ [illegible]. A queen in small cage given to her swarm – found dead – [illegible]
cage – Colonies with the guide frames and no combs cannot be trusted to
stay – Found one building comb all wrong between the guides – Saw a
number of ~~colonies~~ large swarms without guides – are evidently working better –
The need warmer weather for honey – but they are gaining in brood very fast –
(8th) 52° 74° – N.E. – cool wind – when warmed up bees have worked well –
A forced swarm with a young queen deserted – queen lost – joined to others –
~~(IX.) Made with bees from [illegible] and brood comb with eggs laid by [illegible] queen –~~
~~taken from (VII) – (28) Queen cells just started –~~ (31) only one queen cell – (June 3)
~~Two cells [illegible] – one sealed~~ A natural swarm – and a forced
swarm joined it – the one whose combs were all going wrong – The natural
swarm from an old stock to which an Italian (young) had been given – giving a
young queen does not prevent swarming – 9h – 40° – Wind N.E. – Cool very
early – bees have worked well – Never saw such a wonderful blooming of the
white clover – fields can be seen for half a mile white – Forced four
swarms – gave no guides intending to do so in a few days – Another swarm
with guides and no comb making bad work – Two Cage No (2) queen hatched at
~~(X) May 28th – Made from [illegible] bees – (28) gave sealed Q.C. from (IV) – (29) Q. –~~
~~[illegible] this~~ hatching the same time – one with the other – both large and handsome
A Cage No 3 – hatched – handsome and very long – Cage No 1. and 3 – are
lettered queens – A queen had opened her cocoon – it was so near the bottom that
she could not hatch – had gnawed it higher up – opened for her to come out – was
very ~~[illegible]~~ shy – dodged in a number of times – very different from those in [illegible] –
(30th) Stock to which J. H. I. L. had been given swarmed – found only one queen
cell and that not ready to hatch –! Two other forced swarms deserted – one
had its crooked combs taken out yesterday P.M. – Two swarms out together
(~~XI June 1st – [illegible] bees – a few [illegible]~~ when [illegible] the
found one queen crippled – not hurt – could not find another – think she fell
to the ground – Bees getting much honey – Taking the whole there are queens from
4 of last – (31st) Warm but windy – one swarm deserted – returned – a
three day hive swarmed wind powerful – returned to hive – think queen got back –
A swarm [illegible] beautiful Cage No (1) hatched – Have more queen cells than I can
take care of – bees get much honey – [illegible] no notice at all of honey in combs [illegible]
[illegible] some [illegible] – Saw a demonstration of [illegible] theory – a [illegible] comb –

(XIII) ~~Italian bees and other I. Case (June 5th)~~ — had cells of proper depth on one side — N on the other very shallow worker cells — i on the deep side many eggs laid — a few on the shallow — these have been capped as drones — the bees scattered the larvae had no great chance to make the capping larger — Dr Kirtland informed me in Chicago that he once saw eggs near the ~~margin~~ margin of comb when sealed they proved to be drones — have no doubt that an egg laid by queen when out of hive would if put in worker cell be a drone and if at once finished with semen a worker — clear honey very spicy in flavor and very white — (12th) Hot — clear — rather windy in A.M. — bees work but will not notice honey about — saw an Italian bee on a piece of new comb in loft of a hive — cutting it into small pieces and packing it upon her ~~legs~~ legs — very strong (~~XIII I. Q. from my cot~~) — Italian wh. swarmed yesterday started again to day — went back — found two queens had hatched (it had a young Italian queen some time ago) found two cells with perfect active queens in them — shut in — A hive wh. swarmed a few days ago after had sealed queen queen — had its royal cells being destroyed some sealed queen cells — the old queen was unfertilized — let her out very active — very large quantities of royal jelly in the base of sealed queen cells — notice that in large stocks getting ready for swarming there is a much larger supply of the jelly than in nuclei — One nucleus with a sealed queen stolen last night — this feeling of insecurity very painful — Queens seem to be very slow to get impregnated — windy weather may cause it — (13th) Hottest day yet — A colony with Y. Q. wh. deserted yesterday did the same to day — plenty of bees honey and unsealed brood — gave her to another colony — In a colony without a queen and combs filled up with honey — and crowded with drones — removed drones and gave [illegible] queen three drones from ~~a queen~~ queen at first a drone layer — handsomer than any I have seen for this queen — A queen hatched had opened a queen cell — removed her and the bees closed it up again — Rather too hot for the bees — honey very thick — (14th) Very hot and dry but pleasant haze — bees work better than yesterday — made a nucleus of a swarm — one that had not its queen prepared with caged unfertile one — but afterwards left and joined a swarming hive — saw an Italian eating wax (white new) and putting on its legs like propolis — A hive wh. had swarmed — had Y. Q. cell grown — and caged it Y. Q. to prevent her from hatching — and had its queen cells all destroyed as I thought (one unhatched — appeared early this A.M. to mean swarming — ran out — flew hastily — at last found the Y. Q. from cell — caged and piping in the portico — found another hatched queen and many more cells — still bees want to free her to swarm — (15) Hot early — the night having been sultry — at 10 A.M. wind N.E. and much cooler — night cool with strong N.E. wind — bees have gathered much honey — at 11½ P.M. of the 14th found three queens hatching and saved two — A new swarm with Y. Q. left and joined another [illegible] I soon found the queen with a cluster on the ground [illegible]

(16th) Very cool A.M. — A queen had murdered 8 queen cells — Another taken from a hive after she had killed one — began to open one at three days — found to have deformed legs? — pushed bees off from the cells till the any returns — put in a closed cell she opened this too — queen dragging
~~(14th) June 10 — Eggs from Italian~~ [illegible] — Have now five unfertile queens in separate cages — on one nucleus — What a clever very project — could have done [illegible] in it! Queen could escape — Saw another cell from which queen had [illegible] and which deceived me by being closed up by the bees — (17th) The cell opened by a queen and closed again by the bees did not hatch — Another partially opened by me and covered with a wad of wax hatched — Have a handsome Italian Queen from the drone layer (see June 5th) showing that she has been impregnated by an Italian drone — and as none were hatched when she first began to lay a demonstration that a queen may be a drone layer and afterwards become impregnated and become a normal queen! My theory as to color of Italians seems to be con-
~~(18th) June~~ [illegible] firmed — to day I have had quite a number of very beautiful Italian queens — such as I got when apple trees were in blossom and the nuclei were in good heart — while those raised when they had to be fed and were discouraged were generally poor in color — I have put as many as six queens in cages over a nucleus rearing queens and the bees feed them — I see no reason why almost any number might not be disposed of in this way and very great advantages be secured — We can keep them on hand till wanted — make a smaller number of nuclei do more business — have the queens when put to colonies ready to seek the males at once and so lose no precious time — & the colony
~~[illegible]~~ — with so many had queen cells: one hatched in the A.M. — in the P.M. I found that another had hatched and that the two had not fought — and that there was still another queen cell! I did not know that these were there — May not the presence of caged queens in cages deter the queens from fighting and from killing sealed queens? At 2 P.M. — a thunder storm ending in a fine rain of several hours — doing a world of good — lots of the ground very hard — and corn & needed rain — it gives the bees a new lease upon the white clover — A.M. very windy — A nucleus whose queen ought to be fertile abandoned its hive — another with a queen of only two days old deserted — 9.–
~~[illegible]~~ one of mine too much warped open — After hiving the first — the bees acted as though she was not in — in hiving the second saw both queens go in — the one not belonging was imprisoned — gave her to her colony when she again left with [illegible] and returned to the same nucleus — removed its queen — and later found her all right 245
very little harmed in — (18th) Cool A.M. — at 2 P.M. — a very fine shower — On the nucleus with so many queens found one dead and another dying — where there were lots of combs (see 17th) bees did not gather over the cages as they did on the others — this shows that precautions are needed — Found evidence that two or three queens have met common drones — 3 Gen. T.O.

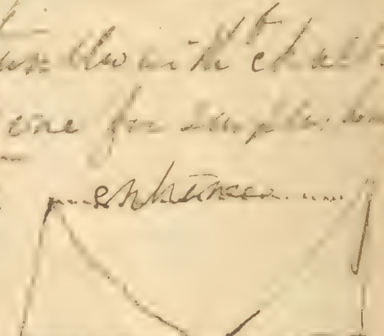
(1852)?
N

Non Swarming — If the wings of fecundated Queens be clipped they will be prevented from leaving the hive — This may be done in my hives. Many advantages would result from this — If it were regularly done as soon as young Queens commence laying — then swarming would be under the complete control of the Apiarian — (perhaps occasionally a Queen would try to leave — be lost and thus swarming take place from the young Queens) — Queens sometimes fly away with their colony from hives which are very much disturbed — this would prevent them — and all operations may be performed which are necessary for profit or experiment —

In this way the age of Queens will be known — In the management of a large Apiary it would be of great advantage — as it would secure the Apiarian against that excess of labor which drives him in the busy season — and would enable him to work more leisurely and to more advantage — If a clipped Queen endeavors to leave — she falls — swarm returns — if then supplied with young Queen nearly mature — will not swarm — the other young sealed queens may be taken to be used —

(July 23, 1861)

(Non-Swarming) Let wings of queen be clipped — on projecting edge of alighting board — have a triangle of wood — keep it well chalked so that when a queen comes out she cannot climb up it again — or have such an arrangement of glass or wire gauze that she will seek to get up it without climbing up — bees will return and queen may be returned — or before the bees return — queen may be removed — hive covered with sheet — similar one put one side — when returning bees begin to enter queen of new hive [illegible]
If there were a hollow triangle would not answer — a glass box or tumbler with chalk powder cannot be climbed by a bee that cannot fly! Such a box (one for each hive) may easily be used to catch queen — triangular blocks may be set thus.



If the sides of window box quite smooth and chalked a bee that cannot fly cannot get up — these blocks may be stood up on ends to better advantage so as to present such a height that the queen [illegible] not to go over them but to fall into box — They then need not be set on the ground — same plan to prevent fertile queen from leaving new hive — after hiving — swarm
Or

Journal continued from 9 (to 39) — June 4th 1866 — 70° .. 84° — Windy — Bees (1)
were worked well on clover — Locusts gone — Locust honey very thin — clover thick — bees do not gain so much honey to seal as from the locusts as they seem to — (6th) 72° Transferred [illegible] yesterday — Some of the [illegible] — Gave syrup with whiskey to a colony (queenless) that would not take queen — putting on — when caged — putting on cage — most of them came out on the side of box — a few stole seized a queen — plan a failure — too much whiskey would be needed — even if successful — Thunder — a little rain — cloudy most of the day — At intervals bees came in very heavy — from honey dew? Not much done on clover — [illegible] S. W. — towards night a dash of rain — wind went N. W. — much cooler — Bees beginning to build up well in small boxes — if a good day for honey tomorrow — will tomorrow night begin — could hardly in them [illegible] pincers are working admirably in frames — the wax should be first melted so as to get rid of all impurities — then perhaps large [illegible] may be used to advantage — If daubed with bee-glue — very hard for bees to work it — discourages them — This very important to be noticed. I find it very easy to put on and take off the small boxes — easy to get out combs and then fill — easy to remove them all and get at frames — This owing to the boxes being so easy to handle and the coverings being so easy to supply them — (7th) 58° .. 74° — Sun very hot — Bees working admirably — Early and late very heavy with a thin honey — some of them look as though they had been smeared in honey — Saw such bees in the blossoms of the Tulip tree — ~~Sticky Locust — them in the~~ The Camosa now in full bloom — bees work on it — can perceive no smell — Common locusts have some seedlings [illegible] — Raspberries still putting on — White clover very sweet — (8th) 48° .. 70° — [illegible] but — honey gathering about as yesterday — Took off a few [illegible] of boxes — examined combs — put them on again in about ten minutes — am surprised to see how easily it can be done — If bees will not build

comb under them— no difficulty at any time in removing them—
Removed a queen at 4 P.M. of the 5th— a sealed queen cell at 4 P.M.
to day— let out in the A.M.— a fertile queen caged on the 6th—
after removing queen cells— transferred in which [illegible] clear in P.M.—
Where drone eggs are laid in worker cells— the [illegible] find it often very
difficult to get out of the cells— often die in them— this especially the
case when they are close together like [illegible]— 8th: 56°: 74°— Bees working
very well— Important— although hive may be crowded with bees and
honey and brood the clustering bees seem to be not inclined to swarm
so long as most of the newly gathered honey is [illegible] (there left will
not be able to take care of it and head too— Bees are in most
of the hives getting rich but have not yet sealed much honey—
9th: 68: 70— Wind at E— very cool part of the day— are yet
getting honey well— saw [illegible] to [illegible] drones and then not
much [illegible]— [illegible] [illegible] killing drones— At 2 P.M.
drones in a glass hive lay densely huddled or packed together on the
alighting board— had been persecuted before— At 3 P.M. bees came
out on front of hive as much as they often do just before swarming
drones were so densely packed under the entrance as almost to smother
bees— The bees were slowly killing off drones and yet honey coming
in abundantly! cool nights and days may cause it— 10th: 60°: 76°:
Wind still N.E.— almost first— Splendid day for honey when it
warmed up— Found in a great of drones on the outside of glass
hive— chilled— others almost huddled under entrance— removed
and killed them— After sun down saw bees drag off (glass hive) d[illegible]
from the combs— Does this early destruction of drones imply a poor
honey harvest? Hickok (11th) 51°: 75°= N.W.— Went to Cincinnati— then
very hot sun (12th), 78°: N.W.— then Hot— (13th) 52°: 80°: S.W. then
[illegible] very hot— Bees work well on clover— but do not seem to [illegible]
up below or make new comb as fast as I should like— are killing drones

in many hives — Saw drones expelled when it was too dark to fly — Are up in boxes abundantly — but no building yet — a few days more and it must begin if honey abounds —

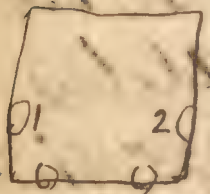
Important ☞ Am satisfied that it would pay admirably to cement my small boxes — Imagine it would be a very heavy job for them to do it — so many corners to be cemented — It should be done before the tops nailed on — with thin bladed knife — (gold leaders) dipped in melted rosin and beeswax — one person to do this and one to nail boxes together — done when box has bottom nailed to uprights and is taken out of fixture for nailing — to be turned to have top nailed on — Might not glass be held so as to have three edges dipped in paste — gum Arabic (tragacanth) glue or some proper cement easily held in a proper state — so that at least six of the eight edges might be tight — (14th) 56°..88° — S. W. — Clear Sun fierce — bees working well on clover — with some white on Tulip tree — some buds yet to expand — so few now as to be of small account — Many hives expelling drones — never saw them do it so generally when honey abundant — ~~Expulsion on Saturday~~ (15th) 61°..84° — Windy

~~[illegible]~~

(16th) 70°..86° — Very hot Sun — bees working admirably — Do not seem at all distressed by the heat in the shaded hives — after sun-set — some thunder showers — about 9/10ths of an inch fell — A truly blessed rain — (17th) 66°..86° — never felt a closer atmosphere — Bees working splendidly on the

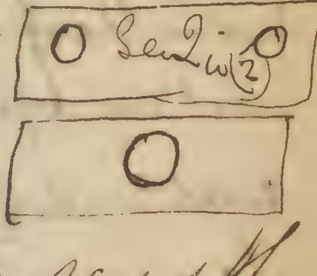
white clover — Before noon clouded over — heavy thunder — about 4/10ths
of an inch fell — Never saw a greater sight in the bee-line than the
air swarming with returning bees — If the hives had had contracted
entrances it would have been impossible for the bees to have got in
without great delay — The apiary looked like one vast mass
of swarming bees — Bees hatched out a young queen hatched in their
nucleus after their queen had been caged — a very unusual occurrence —
Bees not yet working in boxes — hives not full below and honey
not yet sealed over — A few days more and if this splendid
yield on clover continues they must work in boxes — The
only point I have any doubt about is how the wax guides
will work in the boxes — whether they need comb as a pattern
to start on or one comb = 18th 66° 84° — 5 A.M. — Before 10 O.C. last night
it began to thunder — and in an hour or so — a storm began which will
be long remembered — The heavens were a blaze of light nearly all night long —
and "the God of glory thundered" — It seemed to shake all around us —
By sunrise the wind blew furiously from the N. E. — soon changing to S. E. — S. W. —
N. W. — and raining about very much — 1 8/10ths inches of rain fell by 6 A.M. —
This storm must have inflicted great damage upon crops, hedges, roads &c —
A little hail fell here at intervals — but not enough to do any damage —
I am anxious to see whether such saturation of the ground can check the flow
of honey when clear and hot again — It must tend to prolong greatly the
blooming of the white clover which is in such abundance — 9 A.M. — 1/2" more
(2?) was correct)
of rain has fallen making 2 1/5 — and with yesterday and night before last — 3 1/5" = Before noon
sun very hot — and bees working well on clover — P.M. — Bees working splendidly on clover
but the honey is thinner — killing of drones seems to have stopped — One large stock with
heavy
six the boxes having comb of last year — are to day for the first time putting honey in boxes —
Begin to think that two better than three wax guides — 19th 68° 84° — S. W. — bees
worked splendidly till 2 P.M. — when thunder shower came up — .35 of an inch —
Nothing done after the shower — Bees building queen cells here twice in a nucleus

hatched out and killed young queens hatched from cells given — this A.M. — one [illegible]
after she had gutted queen cells! 20th. 66° 76° S. W. — A.M. — cloudy — and too
wet for bees to do anything — Last night bees began work in my small
boxes — In one colony began in form a fine brace — on the side! not noticing
the wax guides! — comb running in the right direction! P.M. — By 1 P.M. — bees
began to work well on clover — but by 4 P.M. — wind changed to N. W. — grew
some cooler with wind — and bees slacked off very much — I find many
stocks beginning to work in boxes — not working from the top down in a
single box! some going the wrong direction — (Very Important Suggestion)



If bees generally incline to begin low down on one side —
might not the wax guides to be low down — as at 1, 2 — ? they very soon
extend the comb up to reach the top — It would seem to be more
natural to them to begin low down and close to tops of frames —
Notice how very few Italian bees will begin comb building in a side
box — though hive crowded [illegible] big force of bees — [illegible]
Italians begin comb building — black bees [illegible] a dozen ways and
comb building were advanced before [illegible] — [illegible]
bees most ahead — May not Italians incline to begin below more than
black bees because they work in such immense numbers and want to be near
the mass of bees? The building of drones has almost ceased — and they are now
tolerated in the stocks where most of them have been [illegible] (21st) 58°. 68° —
cloudy — most of the day quite cool to rain — P.M. — for two hours bees brought in
much honey — Less and a few degrees warmer would have made it a splendid honey day —
22nd — 57°. 72° — N. W. — A.M. — cloudy and very warm — Bees have begun work
in many of the upper boxes — In any one as yet have they gone across from glass to glass —
In none as yet have they begun there — All the better-put wax guides about half
way down on both sides — or on one only — The new plan for boxes works first — I suppose
it would — place of starting excepted — Do not want comb for guides unless very nice —
A great advance step gained in seeing earlier honey for the market — For
the last week young bees have not worked [illegible] kept here [illegible] — and

yet stocks are getting very strong in honey — very few swarms — Those in the
a Bunched stocks report none as yet — This week if at all bees must
begin to swarm freely — By 10 A.M. sun came out and bees began to work well
Warmer weather needed for full work on clover — A European Linden at Dr
Patterson's has been in blossom some days — Bees saw it to day swarming with
bees — Season of Linden might be extended at least two weeks perhaps three
by having different varieties — In 1863 the European blossomed in same place
about same time — possibly a few days later — the American will not probably
show any blossoms until July — If bees work wax comb straight in small
boxes without any guides (upper wax guide is same as nothing) how nice with
lower side wax guides — Better nothing than poor comb — Mellilotus
Leucantha (last planted) just beginning to bloom — bees on it — (23d) 61°. 74°.
Bees work literally well — for so much clover — Fear that they are too late to make
a large amount of box honey — In a few of the boxes shew that they need
guides — Am I right in making holes so near the corners —
Would it not be better to make them nearer center — (See 2 in)
and perhaps one 1/2 hole — Will this interfere less with comb
building than an inch 1 1/2" than two one inch holes — Is there any need of the
intercommunicating holes? Are two in the way of straight comb building — If one
1/2 hole in center and a wax guide on one or both sides about 1/3 of the
way up — bees will probably prefer it very much — (24th) 53° .77° — Have
had some very large queens from cells taken from a very strong stock — such
cells always have an excess of jelly — much more than cells usually have — May not
queens bred in such cells average greater fertility? This is a point of much
practical importance — Thunder and a little rain P.M. — After this bees worked
better — quality of the nectar in honey shows less — from the section than from —
25th: 56°. — Went to Poultry at College Hill — Rather too cool for bees
to do much — 26th: Warmer towards 4 P.M. — bees worked unusually well
for this season — came in very late — 27th: 58°. — Much warmer — bees have
done a good day's work — Much in boxes preparing — only a few stocks



are working in boxes — From all I learn bees have scarcely swarmed at all this season — and colonies where little bees have not worked much in boxes — While the Italians swarm this season in August? the 2nd crop of red clover will probably be good — Linden almost ready to blossom — Hope yet for some surplus — (28th) 61°..82° — Good day for honey — Linden (Bene's) on warm west side in blossom — has been for several days — Not a swarm yet — (29th) 61°..84° — The last two nights have been good for corn — for a week wind N. and N.W. — nights very cool — the great rain followed by so much lower temperature in the height of the honey harvest has told against surplus — Bees are now getting well — Linden in part contributes dark colored honey in comb — [illegible] clover? (30th) 68°..84° — S.W. — Great day for honey — Hive (strong) which killed off most of its drones some time ago — warring at them again — Yesterday and to day made six artificial swarms — Work very well — Gave one capped brood comb with the queen cocoons ⅓ Gave a laying queen to a nucleus which had been rearing queens — Next day or two after saw a small curiously colored queen come out of a flat drone looking cell — Put her to a nucleus — gone — Some three or four days later found a small queen a few days old in nucleus with the laying queen — Might almost like a worker darkly [illegible] with colors blending like hybrid workers a little — held her in my hand — she stung me so as to hurt considerably — but as much as a worker sting — dissected her — ovaries very small — spermatheca [illegible] of usual size — Appears to have had a worker development in dispositions as well as the stings = July 1st 68°..84° — S.W. — Splendid day for bees — 2nd 68°..86° — S.W. — Shower with thunder at a distance — also yesterday — Splendid day for bees — Artificial colonies work very well — Italians in comb building exceed their queens in laying [illegible] — do not begin on so many combs as black bees — prefer to push up their work

Last night set aside a [illegible] with many queen cells a [illegible] of comb with three or more good queen cells — bees were bound — Early this AM — found [illegible] one [illegible] dragged out — the one left was [illegible] a little on side — Could find no queen and no cell from which one ~~hatched~~ — Five hours later the hive closed it up just as when I opened for examination! In the P.M. found a beautiful queen hatched from this cell! Opened from impatience? Bees do not ordinarily meddle with queen cells — (3rd) 68..8 Bees working admirably — (4th) 70°..94° — Hottest day for a long time — bees sensibly decline from field work — too hot — Garden &c just trying to stand suffering for want of rain — After sun-set showers — Heavy thunder and wind most of the night — ~~at 4 P.M. began to rain freely~~ (5th) 70°..83° — N.W. — Began to rain freely at 2 A.M. — A slight shower after sun-set — 6/10ths in all fell — Splendid P.M. for bees — all nature gladdened by the showers — (6th) 68°..86° S.E. — Not much work in A.M. — P.M. — bees active upon clover — White clover in pastures sensibly declined — on road sides in its prime — The heavy rains have developed a large yield on road sides and places where it is usually scanty & not so late as to be dried out — How much longer will it last? Am entirely satisfied that bees work up better in my new arrangement of hives than in any previously devised — 7th — 70°..88° — S.E. — Heavy showers with thunder all around — very light shower here after sun-set — Fair for honey — Find no difficulty in injecting water with rubber and syringe even into a cushion — can burst her rectum! If queens were not so hurt by pressure necessary to open for injection may succeed — Compressing queen between fingers so as to inject — Did so to day — Used much violence to see how they would stand it — how much pressure can safely be used — (8th) 70°..82° — A sprinkle after sun-rise — Sun mostly obscured A.M. — P.M. — excellent for honey — white clover still good — (9th) 68°..82° — Obscured in A.M. as yesterday — Not so much honey — Thunder heard — few drops — In four instances just hatched young queens (given to stocks from which swarms were fresh and which were moved to new place) gone and queen cells in place of them! One hatched after old queen also gone! Have not as a general rule received just hatched queens near as well as stocks from which queens taken and nothing else — do they become suspicious? Have been — to examine more closely into the trick played upon them — (10th) 68°..82° (Note — Thermometer feels house air — but in heat of day if more exposed range about 4° higher) Sun obscured in A.M. — not much done — P.M. — bees worked well on clover — are they busy on mellilot [illegible] — A few acres of this would give me a good surplus yield— By Improvement— Small Boxes with one comb filled when supplies not very abundant and when large boxes could not be filled— (11th) 70°..87°— Very dry heat— bees work slow on white clover— active on mellilot— Melissa [illegible] just in blossom— (12th) 70°..88°— heat oppressive— [illegible] at College Commen— Considerable white clover blossom in bloom— wheat nearly all cut— corn small— but clean and healthy— [illegible] [illegible]— (13th) 76°..94°— Hottest at sun rise this season— Cloudy at night— a few drops of rain— (14th) 73°..94°= Under tree 98°— Bees can do but little— Removed yesterday two small boxes full— laid them on alighting board— bees left them in a few minutes— this quick leaving of bees very important— Neither has ever been unusually hot for a long time— seldom if ever equal— There is next to no honey in surplus boxes— Would it not be best to cage queens and take the bees [illegible] others in all the full stocks—? Top honey consumed— young queens seemed— and there plenty of bees as have been now too much [illegible]— (15th) 73°..94°. Terrible heat all over the country— Great loss of life from sun-strokes— Late in P.M. shower with heavy thunder and wind came up from N. E.— 9/10th of an inch! Grass on road sides and pastures beginning to dry up— a tipper rain— (16th) 72°..92°= Very little relaxation from the intense heat— In the P.M.— thunder with the showers at a distance— (17th) 74°..98°— Under tree— Unprecedented heat and loss of life all over the country— Range of thermometer over 100° in Montreal— higher than in Augusta— Italians working on red clover— some work also on white clover— but, work on mellilot— Thunder in the W. with distant showers in A.M.— About 4 P.M.— heavy thunder and rain here and in the N. E.— very slight quantity of rain here— (18th) 74°..99°. Under tree— Thunder in A.M.— with showers at a distance— At 10 P.M.— distant thunder— 2 1/2 A.M.— heavy wind— N. E.— with copious shower— and very severe lightning close at hand— thunder and lightning apparently simultaneous— one inch— (19th) 69°..92. Under tree— At noon thunder and heavy clouds— for 4 or 5 hours— only a few drops of rain here— (20th) 70°..92°. Under tree— heavy wind and rain of Saturday very injurious to corn and oats— bigger grain— prostrated and broke the corn— (21st) 70..94°. Under tree (22nd) 72°..92° (23rd) 70°..94°= Thunder with rain at a distance— (24th) 74°..92° (25th) 72°..90° (26th) 72..86° (27th) 69..88°— (28th) ..90°— (29th) 68°..— 6/10th of rain— from N. E.— (30th) 68°..80°= 1 1/4 of rain from [illegible] (31st) 66°..

Journal for 1869 } May 13th = Journal discontinued from old
(Laus Deo)

complaint — Result of last season very disastrous — Abt 50 lbs of surplus honey in boxes — 1/3 of colonies had to be broken up — no honey of the most season gathered after July — but little that month — Abt one thousand! great strength of stocks going only to eat up honey — Immense mortality of bees in Ohio Valley — see Bee Journals — We lost but few & none by disease — By middle of Oct. began to feed — some stocks could not have lived a week longer without feed — then weather too cool — rolled [illegible] & [illegible] combs — placed them over the cluster under a carpet — Fed until 1st of May — then bees began to get from peach to blossoms — Have had a wonderful blooming of fruit blossoms — apple especially &c. — Have had to empty [illegible] larger stocks to prevent them from swarming [illegible] — Never saw more [illegible] in blossoms — [illegible] have gathered wonderful [illegible] twice [illegible] — but few stocks as strong in bees as at this time last year — should season hold out for honey as at present it may be as good as 1861 — that followed two disastrous years — 1862 very disastrous in [illegible] 1863 great honey year — After a bad season a good — show the importance of feeding — taking more than usual care in bad years seems almost to get [illegible] with [illegible] years [illegible] — Weather [illegible] much [illegible] [illegible] — [illegible] blossoms [illegible] — [illegible] though they could not — honey [illegible] — 14th) Cold & wet — queens have been crowding cells with eggs the last few cold and wet days — (15th) Cleared off — bees intensely active — very windy spring [illegible] — Since 1st of May weather unusually windy — but yet bees do wonders —

Important!! When queen removed and bees left to rear without queen cells – far better to cut a slit in comb where brood of proper age than to let them build on surface of comb – get much better queen cells – If stock shows the eggs near uprights cut away a narrow slice of comb near uprights the Bees will at once begin their queen cells in these places – To get many queen cells – give fresh brood with slits cut after bees about ready to seal are first lot – a third lot easily secured – the first removed as the others sealed – (16th) 50° 60° Southerly – cold, cloudy very windy – bees worked some in P.M. – (17th) 40°.. clear – still – frost in two places – On Saturday emptied about [illegible] gallons of apple blossom honey – very clear, very odorous – took it before sealed over by bees – does not require a very [illegible]! extractor – can empty cells with eggs and young brood without disturbing them – This Spring has been dry windy – frequent but not such heavy rains as last Spring – [illegible] more grain never more luxuriant – Apple blossoms [illegible] than last Spring – will [illegible] be better – Have already got more surplus (emptied) than all surplus in boxes last year – [illegible] had none last year (17th) 40°. 68°. N.W. – still cold and cloudy but not so windy – bees have got considerable honey – apple trees nearly all out of blossom – emptied many combs – the cold [illegible] keeping back Locusts excellent for bees – In [illegible] where queen was caged Saturday – queen [illegible] one [illegible] was removed for sale showed marked signs of [illegible] although had a just hatched queen given them and not [illegible]

Plan to secure pure Impregnation!! Use a small whitewashed room with single sliding window near ceiling – keep in it a strong nucleus with abundance of choice drones – make them accustomed to fly about with window closed - and opened after - Nucleus may be set at first near window on shelf - and gradually removed and set on floor in one corner of small room - this insures flying of drones in room - When all ready - Put nucleus with queen just right say five days old and confined with queen excluders [illegible] then into the opposite corner on a shelf half way up to ceiling - take a comb with queen on it and lay against nucleus box - (the drones being in full flight) easy to make them fly at say 2 P.M. - close window - so that may [illegible] as usual be flying in small room - may be well to have the drone nucleus without a queen - If found to answer the purpose with queen may be laid near drone nucleus and the nucleus let [illegible] to place - or box with part of nucleus [illegible] to prevent loss of heat - Plan may be easily modified to suit circumstances - easy to release the queen if [illegible] - after impregnation Can the plan be made to answer? Must be tried - so that we may breed from [illegible] drones and keep down drone breeding - It may be best for a few nights then to impregnate in the day or say beginning at 12 M. [illegible] - Would queens feel too strange? Would they fly to window and persist in trying to get out? Would it be well to confine them on window - Would bees may [illegible] windows? (18th) 44°. 64°. [illegible] most of the day [illegible] cloudy - Bees wonderfully active for the weather Honey [illegible] some of the [illegible] more than this time last year! [illegible] and abundance of pollen (but poor pollen season) causes an immense deposit of eggs - [illegible] there is [illegible] great [illegible] and

by the time it comes all the black weight will go into the
if the brood combs are more aided in hatching bees from the
larger ones — (19th) 46°.. 60°.. N. W. — weather colder even than yesterday —
At intervals a few [illegible] [illegible] well — will be the [illegible] of [illegible]
soon" if weather does not change — Bought my plan for the [illegible]
side boxes and cold winter have to a result that seems very
promising — (20th) 37°.. 70°: Bees very active — Wind passed South — weather like
such ought to settle days — [illegible] has not settled — (21st) 56°. 70° — S. W. — Bees active
honey only in moderate supply — 2 P.M. — began to rain — 9 P.M. wind
changed to N. W. — a [illegible] rain — (22nd) 46°. 62°: Bees active with
[illegible] [illegible] — first of the season — Stocks now average [illegible] than
a year ago — (23rd) 38°.. 70°: N. W. to W. — Wonderful weather coming to
near the first and yet none to [illegible] — Thermometer has been as low as for
many days — falling from 62°.. 38.. 22°. [illegible] [illegible] [illegible]
(24th) 42°.. 72°: S. W. — Glorious day — Bees get just enough to keep
them up to their full height in breeding — Some years ago
after getting the [illegible] in one breeding I [illegible]
exclusively from them I have [illegible] from queens — Some that
[illegible] [illegible] [illegible] lay — others filling eggs in cells
[illegible] failing when not much as a [illegible] [illegible] [illegible]
[illegible] — After getting queens from Italy and other
sources and [illegible] close breeding I have worked only
[illegible] [illegible] queens — had none last year — [illegible]
[illegible] [illegible] [illegible] a [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] relations — Made many
machines [illegible] in [illegible] [illegible] to be built up with [illegible]
stocks — this season [illegible] prefer to let [illegible]
not until the 2nd day [illegible] a [illegible] when they were [illegible]
[illegible] in [illegible] — If [illegible] queen cells [illegible] more [illegible]
to [illegible] [illegible] bees [illegible] [illegible] at night [illegible]

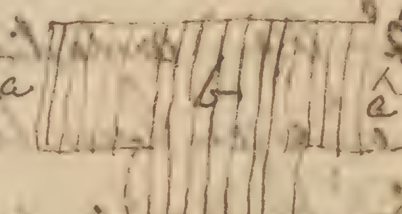
(25th) 54° 76°. S.W — Bees very active — In ordinary seasons little done on
blossoms of wild cherry — this year bees humming — Raspberries are in
blossom a little — Stocks growing heavy in honey — Two large white
pine trees at G. McCord's alive with bees — working on the expanding
buds — Made yesterday and to day a number of nuclei in the
large hives — to be built up — Am making available use of all
the good empty worker combs — and as soon as the [illegible]
is over shall use all my old combs (— Important) May not
honey when too thin be brought by heat to the proper consistence?
This is the way the bees manage it — By sun heat or artificial
heat it seems to me that the thin honey emptied out of combs
may be brought to the right state — [illegible] then the only objection
to emptying honey unsealed removed — also [illegible] in emptying
such honey of disturbing the unsealed brood — (26th) 62° 80°. S.W.
Bees very active — Ground Ivy gives abundant pasturage — Locusts [illegible]
in the last 48 hours made as much progress as in a week before —
Very interesting! A large [illegible] which in some way lost its queen
[illegible] — left in two clusters — examined stock found 8 queen
queen cells — only two seemed to have hatched — shut up and
attended to swarms — In carrying to place [illegible] [illegible]
[illegible] in air — [illegible] [illegible] [illegible]
[illegible] — found fifteen 15 more queens had hatched
Before or after opening the [illegible] swarming box they had
[illegible] taken wing, seemed only five with the swarm — but in
cage bees paid very little attention to any but one. One cage
of one closely clustered — put this cage among some old combs on which
bees were clustered — [illegible] off of cage — the caged queen [illegible]
239 the same — bees cover over this cage — put it in corner of particular
[illegible] most of bees left combs to cluster on and around it — Since after
a caged queen — [illegible] bees from cage [illegible] [illegible]

stuck the same — would follow me about to light on cage — some on others held in same hand — put caged queen in pocket — tried to get to her — after removing her they clustered densely on pocket where the cage was put in. The stock had a [illegible] queen — Caged [illegible] queen — gave them their released — (Hasters eldest [illegible]) acted very [illegible] as a queenless stock with queen [illegible] — united into hive — quietly settled on combs — If I put Candy cage near them gathered on it — but no fury as there are to cage with the other queen. In returning to native stock found the bees down in I settled frames bees maintained the same [illegible] [illegible] my hands and searched for queen I had been [illegible] — This queen is [illegible] was not as fertile one — Bees were [illegible] some much this season — (27th) 60°..68° — Very heavy rain during the day with thunder — late in P.M. — bees quite active (28) 61°..80° — S.W. — Very heavy rains last night with incessant thunder and lightning — very warm day — bees not so active as some days — [illegible] rain [illegible] with [illegible] — a little [illegible] to day — At [illegible] of [illegible] queen [illegible] [illegible] — had [illegible] about [illegible] — (29th) 64°..84° S.W. — Rain with thunder last night — Attended [illegible] celebration [illegible] decorating graves of our soldiers — Heavy shower with wind after ceremony — ground strewn with Locust blossoms — (30th) 64°..76° S.W. — Rain last night ground very wet — bees active on Locust but honey very thin — Prospects of either [illegible] a fine harvest may be better in the long run — P.M. Very heavy showers [illegible] off with wind N.W. — (31st) 68°..72° — Very heavy rain in A.M. — Ground saturated — over four inches have fallen the past few days — P.M. — bees very active on Locusts — honey as thin as [illegible] — Locusts have ripened in unusually —

June 1st — 60°..80° S.W. — Hot sun makes Locust honey rich — It is

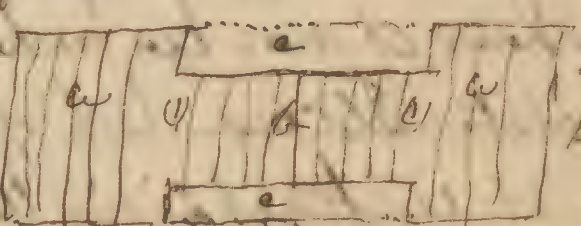
a common remark that the Locusts are unusually full of blossoms - the trees
are a white mass - Bees accumulate beyond the experience of man -
[illegible] of the strong stocks about (7000) one thousand [illegible] per minute
(2nd) 60°..80° S.W. - Glorious day for bees - Locusts all rich crop - so rich
[illegible] them that must delay swarming for a few days - when the
[illegible] sides and top of combs are [illegible] sealed over while there
empty - (3rd) 58°..80° S.W. - like yesterday till 4 P.M. - then shower
Emptied - some hives almost full of honey - (4th) 64°.
(5th) - Locusts very productive - Emptied about two hundred lbs -
At sunset violent rain gust - ~~(6th) today~~ - Much cooler today (6th)
39°..62° - Frost in low cold places - Bees very active on clover [illegible]
[illegible] Much [illegible] [illegible] - emptied [illegible] by yesterday
(7th) 40°..66° - Splendid day - bees wonderfully active - [illegible] honey
from Locusts since [illegible] of 4th - Two good swarms [illegible] - these
in my [illegible] - Emptied largely [illegible] [illegible] noted -
8th) 44°..73° These cool nights and not over hot days just the
thing for honey - Never saw bees do better - honey thick - white clover
[illegible] abundant - Emptied [illegible] honey of a very rich consistency -
I find that very few larvae are displaced by honey emptying - if emptied
[illegible] much sealed as to require uncapping - (9th) 60°..80° -
[illegible] ~~impatient~~ [illegible] Discard nearly entirely the idea of getting honey
in combs [illegible] honey extractor all the time during full honey harvest
Gradually combs will have more and more of sealed honey for winter along
[illegible] necessarily empty frames between frames to get new worker
comb [illegible] - Bees having combs emptied and abundance of store
room will not bulge out or be so apt to build drone combs
Besides [illegible] stock [illegible] with full sized frames from the
[illegible] - box or band [illegible] Bees will probably give three times
[illegible] of surplus in this way compared with building new combs - & then
[illegible] entirely building worker combs to ~~suit~~ [illegible] their natural instincts)

the building of the new hard combs just the thing — In this way it seems to me that we can come very near to the getting of the largest yield of new stocks and surplus honey both — If after season not so good how easy to feed back in a few days any needed — or if it will pay better, sugar syrup for combs all above — how much better than when surplus is taken in boxes — If our combs are mainly built in this way all the brood will be in close [illegible], combs that will be straight and [illegible] [illegible] — Am I too enthusiastic in supposing that with movable combs of my construction, honey extractor, Italian Bees, good location, good season, honey can be made [illegible] at a cost by my new system at less cost than sugar? If the plan answers as it seems to me it must then the expense of hives can be very greatly lessened — boxes and all the room they require dispensed with. The hives made easy to be handled by one person — My [illegible] smoke (?) fume to each hive) — Central part of hive to have deeper frames — for bees to winter in — same hive to have two outsides of just the depth of a new standard with present style —



Sections — a, a bees

(a, a) for surplus to be emptied (b) winter apartment — may be made movable to be removed when [illegible] to fit winter deficiency — If better form may be thus —



Top view looking down

(b) Central winter apartment with shallow and deeper frames — (a, a) summer side cabinets for surplus principally to be emptied from — (c c) close air spaces to be filled in winter if desired — (a, a) may be made movable — At (1, 1) may be movable doors — to be used when (a, a) are detached or movable feeders to expose bees to (b)? — See 2(a) 19 —

(10th) 55°. 70°. At 4/20 P.M. yesterday sudden gust with driving rain — Splendid weather on white clover — continued emptying — So cool and windy to day that clover was not sweet until near 11 A.M. Splendid work done in P.M. — [illegible] swarm at 2 P.M. — decided it by caged queen — Took six frames of honey from the stock putting on each side of swarm with the brood in the center — Gave at once boxes from which some partly filled —

Have begun in them at once! This the way to outwit the bees–
Old Stock has swarming queen cells gave [illegible] and by combs
easy to examine not crowded as if not let alone (Important)
In giving surplus boxes let them at first only into central row
say 1/2 or 1/3 — until they not feel strong enough to give — have
boxes narrow — are [illegible] — not so much escape of heat which
does no good till boxes are being filled — Manage artificial
swarms in the same way (11th) 59°..73° S.W. Breezy — great honey
day — made artificial swarm taking combs from old stock — [illegible] frames containing
brood — (12th) 57°..77° S.W. [illegible] — [illegible] working of bees — Made
more artificial swarms to [illegible] in boxes — (Very Important —
Leave off honey board when weather warm — made [illegible] all
[illegible] — (Important) To lift large hives [illegible] heavy
with honey — Set out at 2 doz to day frames with bees (others stuck
to and defend their corners) — then [illegible] to move into new places —
(13th) 64°..72° — Rain moderately during the night — Heavy in A.M. — At noon
clear and in a few hours bees active as ever — at 3 1/2 heavy shower after an —
(14th) 51° 64° — N.W. — Very windy — clouded much of the time — spits of rain
for a few hours at noon bees worked well — Cut comb in boxes on the sides
to accommodate Italians — took off bottoms of boxes — in less than an hour
they were at work repairing the comb! The ordinary hollow chamber
and [illegible] arrangement will not answer for Italians — (15th) 49°..60° —
Same nearly as yesterday — but very few bees stirring — Gave on 13th a fertile
queen to a colony that had swarmed and whose hatching queen had destroyed cells
not finding any young queen — To day found a young queen quite dark
and the old one all right — She had not laid — (16th) 50..74° — Great Bee day
(17th) 60°..82° — Very hot — great Bee day — (18th) 64° 84° (19th) 66..84° (20th) 72.84°
The last few days — magnificent for bees — a world of white clover very sweet —
[illegible] shower to day — glorious weather for wheat and corn (21st)
72.84° — Shower in A.M. — close weather threatening rain on wheat — P.M. clear —

Bees gloriously active — (22nd) 63° 80° The change to cooler weather magnificent for wheat — good also for bees — My [illegible] patent — The new style of mail boxes for sending off queens — just the thing for keeping just hatched queens with say a dozen bees — one great [illegible] will [illegible] many [illegible] also for queen cells nearly matured — to be able to keep young queens and queen cells when needed a great desideratum — (23rd) 60. 80 Lovely weather — wheat almost ripe — Bees more active if possible than ever — White clover honey luscious — spicy — Yesterday a noble swarm — By This swarm a demonstration of the true swarming terms — That stock had not a single queen cell in any shape — supply of honey — old queen with wings clipped — plenty of ventilation — plenty of room in boxes — some [illegible] others filling — weather rather cool — swarmed at about 10 A.M. — No swarming bees to impart to them a swarming impulse — and no queen cells to make old queen jealous — (24th) 54. 78 = Dry — Sun & Moon very red — Great flow of honey continues — Honey partly [illegible] as easy — Good consistence — (25th) 62. 82 = Weather, honey &c same as yesterday — Got in barn to day splendid hay — By accident my honey extractor fell over and one of the three arms broke off — By this accident I [illegible] great [illegible] as I can get the honey in cells for [illegible] — see when honey stands in the [illegible] light — the honey as it leaves the comb [illegible] [illegible] of the rain bow! Have reduced the extracting to a system — Carry the extractor to the hive to be operated on — and make not a single unnecessary motion — By a little practice easily [illegible] the unsealed honey without disturbing the bees! A new era is opened by this machine in the [illegible] — The mere securing a large [illegible] of honey very important but the being able to prevent the [illegible] [illegible] the queen of laying eggs with the weight of the honey [illegible] [illegible] of [illegible] [illegible] [illegible] [illegible] — the [illegible] the bees to build in the [illegible] of the [illegible] [illegible] [illegible] — [illegible] their points [illegible] great to be easily set forth — Have to day invented a new brush for sweeping off bees from the combs to be emptied a horse[illegible] — It is simply fine grass tied up into a brush like bundle — Soft and bees unless I brush them off very carefully — as it gets between combs and upsets the bottoms of frames — Important — Dr James Saunders of this place suggested to me that the rapid thickening of honey in the hive was owing to the great amount of evaporating surface exposed by the combs! This [illegible] the heat of the hive [illegible] this surface could do very little towards it — Thin Locust honey almost as thin as sugar water when emptied out and which requires much boiling to thicken it into a generous consistency is soon brought by the bees to the sealing state — Perhaps the water in part exudes from their bodies when they are gorged with honey and they can at will allow the process to go on to the sealing up or arrest it and retain the thickened honey in the cells! — The honey emptied by the Extractor is always of the proper consistency to can or barrel — If much thicker would candy — So honey is [illegible] the consistency of generous honey. If in summer get all the heat from [illegible] nearly as it [illegible] can be got enough to boil — Important — Use a large kettle — Have an arrangement like a hot bed — glass to get up a great very dry heat — Receptacle for honey to be thickened outside of the Extractor — so as to receive readily the thin honey — faucet to let it run into a broad and very shallow pan — pans arranged so that there might be two or more one over the other — heat of sun blazing [illegible] in one day more or less to do the work — Draw it by faucet to can — outside of Extractor — The whole arrangement simple — [illegible] Honey Evaporator or Honey Thickener — Important — Much time spent by bees in the height of the gathering season in getting water — How easy [illegible] supplying to [illegible] an outside [illegible] with water and [illegible] the time of the bees for more effective work! — Easy in this [illegible] which [illegible]

to sprinkle water over the tops of the frames — thus gaining much more honey —
26th) 74°.. 84°. Hot with passing showers — all around us — dishes at noon and 6 P.M.
here — bees work well — Egyptian queen arrived from Mr Carey by Adams ex-
press — only two workers alive — dark colored — Gave her to bees from a swarm
caged — The stock swarm which came out four days ago leaving no queen
cells swarmed again to day! I gave them six frames of brood — 4 empty frames
and the brood [illegible] had been all partly empty from the mother stock — they had no
worked still — The mother stock had queen cells [illegible] as present — the
swarm had also settled the mother stock once — By putting the queen caged
on the swarming box I succeeded in attracting the swarm to it —

4/ A simple plan for thickening the honey — In the two reflector back of my
Stewart stove have two pans which set on the sliding grates & slide them
out a little and fill — & slide them out a little to empty — Make them to
have a spout to empty — a small plug or faucet to let the honey run out when
properly thickened — draw it off while hot — Plenty of the honey as got out by
the Extractor in a day became so thick that the honey will candy —
A small glass box might properly be used in the den to do this — the
fire heat could always be got from the cooking stove — Heat might
also be got from kerosene oil — Very Important — If the honey extracted is not
only thin but must have any noxious qualities of flavor and poison for
bees hushed off — (27th) 74°.. 86° — Gathering and extracting in full play — Clover very
abundant very sweet — (28th) 70°.. 88° — Do — (29th) 70°.. 84° — Showers by day —
Shower at 4½ P.M. closed up bee-work — Have for the last week had some
[illegible] swarms — Important to be on hand to secure queens — By placing
queen caged on hiving box can detain most of the swarms till all are
[illegible] — Place [illegible] quickly the swarm to split of the hind comb and the honey
boxes works admirably — (30th) 64°.. 78° — Good showers during the day and
no gathering — It is seen the rain [illegible] out the general work
July (1st) 67°.. 82° Heavy fog I almost never see in [illegible]
Bees did nothing on clover till about 10 A.M — then some work done their

I ever saw done in the P.M.— No signs that they work on Linden yet— About 6 P.M.—had the largest swarm I almost ever saw— Caged queen— removed mother stock set hive in its place—and let bees return—When I uncaged queen they did not incline to enter much— Put swarm to a new place—to compare working with swarm put on place of old stock and old stock removed with proper quantity of swarming bees to new place—

((Important)) The improved mailing box the best thing for introducing queens to colonies! Put it in warm weather—with bees and all over the frames—wetting the sponge to be sure that the bees have moisture enough— Start two or more of the tacks which hold the wire cloth to wood under cage—so that it can be easily rolled up a little when she is to be liberated! No danger of rough or unmechanical hands hurting the queen in letting her run out or letting bees to her caged— Honey thickener works to a charm—easily adapted to any stove— Of course a thickener could be made to be heated by kerosene— (2nd) 76° 86° Great honey day— In view of [illegible] in seasons comb too much sealed one— Swarms—very plentiful—moisture—

3rd) 78° 88° Very windy—hot—day—the most trying day of the season— Bees work as well as wind will permit— Lane's Linden has been in bloom for [illegible] days— Linden on west part of my lane in blossom so that bees work on it— Two swarms one a perfect monster— Virgin queens caged when caught so easy—so beautiful to get bees [illegible]— Can place back on mother stock—remove combs with queen cells or ~~[illegible]~~ ((Important)) Do not set new swarms with much brood on old stand— They often make new queen cells and swarm again seeming to act as though they did not realize that they had swarmed! Towards sun-set a [illegible] wind with rain—wind soon went down and a gentle steeped rain fell— What a season [illegible] [illegible] much cooler—hazy like Indian Summer— Bees to

day have not worked so well — Seek after honey left in boxes around —
(5th) 58° .. — Sun rose blood red — real Indian Summer weather
[(Important)] In a hive having frames with nearly hatching queens
if pressed for time to remove cells — remove these frames — and
keep them warm with queen cells [illegible] as much as possible
Shall hope in a short time to send bees to Woodbury in England Italy
in my improved mailing boxes and to receive bees from Germany
by the same — Bees can in this way be easily shipped from
Ceylon to San Francisco — Of course if given in charge to some
one on board who would put water to the sponge more
sure — but can easily be fixed so as not to need this —
Have most porous wood — say cedar? make box all wire
cloth except top and bottom — top for sponge — bottom to easily
to lay in deep groove and be well secured in place — Have a
very light outside wire gauze to receive box — fill between wire
and box with wool — this can be kept damp — Now we have
the plan to get bees from any part of the world "Eureka"!
(6th) 59° .. 82 — Sun rose blood red — yesterday quite cool for [illegible] very
foggy so much so that bees did not fly to lindens far from home;
[illegible] 57 69 real Indian Summer" weather — In P.M. bees worked well on clover
but not near as well as they have done — Blossoms superabundant
but evidently not so sweet — hope that these cool nights followed
by warm weather may restore its sweetness — (7th) 60° .. 84 — These cool nights
splendid for oats, potatoes and grass — not so misty as yesterday — but sun rose
and set a ball of fire — Bees got fairly to work on linden — Have little
[illegible] the [illegible] crop [illegible] probably to amount to no more this season —
Emptied about 100 lbs yesterday — Thick enough without heat — but needs to be
made hot to make wholesome — Draw off as soon as hot enough to expel [illegible]
For getting large numbers of swarming queens (raised from swarming queen cells)
these queens average much better than others raised in small colonies —

(8th) very warm — Late in P.M. yesterday thunder — Emptied about one hundred lbs yesterday — Bees very active on Linden — Much rain has fallen to-day — potatoes made — Glorious for corn-fodder &c (9th) Magnificent harvest day — bees very active on clover and Linden — clover retains its sweetness well — Put two nearly mature Queen cells in a paper bag laid in sun — on that day [illegible] — one hatched and had begun to gnaw the other — (10th) 76° .. 88° — Bees quite active on clover and Linden — Received an Egyptian Queen from Mr Cary — ~~Established~~ her in introducing box —

11th 79° .. 88° — Bees doing well on clover and Linden — but not accumulating as fast as in the best of the season — Very Important If the White clover begins to fail in sweetness some time before the blossoms fail to be superabundant for bees! There are also many changes in bee stocks which I have not and yet there is a very great decline in the yield of honey from this source. The Alsyke clover did not remain in rich bloom near as long as the white — Linden pretty well gone — some few stocks, only in places are worked well on Linden but the main supply [illegible]

12th) 78° .. — Good day for bees — Honey emptied to day has the Linden flavor —

13th) 74° .. 88° Very Important — Some stocks are much better workers than others — Would it not be well to breed from such and try the result.

14th) 78° .. 90° — Hottest day of season — In emptying in the open air bees are very troublesome — remedied in part by keeping hive covered except when putting in and taking out combs — attempt to rob but do not like [illegible] bees succeed — Time now to stop emptying in open air — Very Important Italian bees were not as a rule work to advantage in boxes arranged in a manner perfectly acceptable to black bees — To day removed full set of (21) boxes from a strong stock — (21) All but three had the bottoms [illegible] and were set on the strips — two of these three were at the outside of the middle row — the other about central — these three filled the rest [illegible] empty! The 18 frames almost every cell full of honey and sealed — some cells without [illegible] combs [illegible] filled all so heavy that the boxes of [illegible] in bottom!

Also I can get honey from the Italian bees in boxes to the best advantage — Set the boxes, have the bottoms off — say have only 1/2" inch strip wide by 1/4" thick set in as bottom about 1/8" above the uprights to nail sides and uprights to — when full set in a full bottom — place these boxes directly on the frames — or if Ital. to have bees more freely interconnected on 1/4" strips — so that they can enter them all — no holes in sides necessary — If boxes were front and rear the same arrangement the open parts being painted on side and rear — to attempt at least with Italians to have a double tier — (15th) 94° .. 88° — [illegible]

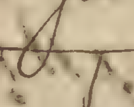
Bees got work considerably on white clover — beginning to work extensively on red clover — //Important// Many boxes not full quite and will not be filled — Put them on strong stocks and feed the honey and treat If they store too much below easy to keep them from and to [illegible] In this way all small boxes nearly full can be filled with the nice honey before the poorer quality comes — The Wonderful Season of 1869 — the hard freezes the latter part of winter and early in Spring ~~threatened~~ [illegible] damage to the wheat and barley — but little damage done — after seeing very freezing came warm rains causing the wheat to start rapidly — In May the wheat was so rank that an ordinary dose would have caused it to lodge and rust — but the [illegible] weather [illegible] to keep it growing was so cool that it escaped almost entirely — Several times the weather was so hot and close (muggy) that a continuance of it for less than a day longer would have almost destroyed the crop by rust — but when our fears were greatest the weather would change to cooler — a good many reports of injury of the wheat crop are damaging tho' [illegible] — The harvest season has been on the whole as propitious as ever known for securing the crop — the best of weather for mowing and harvesting. Barley cutting wheat extra — grass extra — Early potatoes extra — Oats [illegible]

ready for harvesting and a splendid crop—standing up well—
Corn for which we feared most—very promising—If now we
have seasonable rains and the proper heat—a very large crop
is to be secured—Small fruit extra—peaches, pears, quinces and
apples unusually promising—Thus have we been blessed with a season—
thus far to all the praise—(16th) Very hot, dry—92°=Bees much inclined
to rob when hives opened (17th) 74°..90°—A nice little shower last night
Bees working ~~well on red~~ clover and on white—Building comb in boxes—
(18th) Cool—rain last night—good showers during the day at intervals—
no wind—nothing to lodge oats—Glorious weather! (19th) 66°..82°
Splendid weather—Bees very active on red clover—working well on white—They
are now gaining again largely in honey—combs entered a few days ago are
filling well—Interesting ~~any~~—In my record of one of my stocks I find
the following "June 9th=Queen cells begun—(only) were off for brood—11th=
Queen not fertile enough—the bees intend to supersede her—She
ought to be removed."—This queen was allowed to remain and the
stock was not examined until Jul 10th—when a beautiful large
and very fertile queen was found—(and one of her wings clipped—
Two days later this queen was found dead on the alighting board—and
~~from the appearance of~~ and the bees allowed to remain undisturbed until
the 19th—when upon examination four queen cells were found sealed &
and one unsealed—The small number of queen cells for so large a
stock surprised me until I found the old queen with both wings
clipped (showing that she was ~~the~~ queen first introduced with [illegible] season)
This queen was bred in 1867—and was then of good size—It was very evident
from her very slender appearance ~~that~~ and evident feebleness that her
fertility had greatly decreased—and an examination of the brood comb
disclosed a meager allowance of eggs and unsealed larvae while
sealed spread brood from the previous superseded queen was very large—

Rich Hut
I ~~account for the~~ death of this yg queen was killed by some strange
bees which were allowed to remain upon a comb given to this
stock from another hive, at the time her being was [illegible] —
On caging the old queen the bees piled densely upon it — ~~[illegible]~~
20th) found them still piled on it — (In most cases these superseded queens are
but little noticed when caged, and soon allowed to ~~[illegible]~~ starve). and
the queen alive — small and feeble — On dissection her ovaries appeared to be
tolerably well supplied with eggs and her spermatheca with seminal
matter — (20th) 69.. — 82° = Windy — [illegible] considerably — late in P.M.
grew quite cool — bees not so active — (21st) 56°..82° = Bees work pretty well —
(22nd) 86°..82° — Hazy — Bees working well — comb emptied a week
or two days ago filling pretty well — (23rd) 56°..82° = Hazy — Bees
working quite well — White clover nearly gone — bees that [illegible] stick
to it well — Am very much pleased with the size and fertility of the
Queens reared from swarming queen cells — also such as are reared in
full stocks deprived of queen — or from superseding queens and [illegible]
as far as possible get only such queens for wintering over — (24th) 56°..
62°..84° — Hazy (25th) 61..84° = Hazy — moist feeling in the air — (26th)
64°..[illegible]° Began to rain at 6 A.M. — (27th) 72.80 = Cloudy — Rain P.M. =
(28th) 68°..84° — (29th) 70..77 = (30th) 72.80 = (31st) 68° — August 1st = .. 86° —
(2nd) 74°..86° (3rd) 76° = (4th) 72° = (5th) 78°.. — (6th) 66° = (7th) 58..73 = [illegible] —
(8th) 58°..72° — (9th) 58°..74° = (11th) .. (12th) 72..83 (13th) 74°..86°.. — 14th 82° ~~88~~ —
15th [illegible] — (16th) .. 70° = Left Home for the East on July 26th
Has been very dry since I left — [illegible] bees here worked
well [illegible] in other colonies but they [illegible] comb — on red clover —
Rained a little on night of 14th — Good shower to day in P.M. and
after dark — Buckwheat has not [illegible] much yet — (17th) 74..84
Bees working on red clover — Boxes have been filled and now [illegible]
and filled from red clover! Quality of it very choice — Have not before had [illegible]

opportunity to know certainly the quality of red clover honey — am much impressed with the very great superiority of some stocks over others in honey getting — the same ones that showed it last year do so this year — (18th) 67°.. 86° — Heavy fog for Oxford —

Bees active — Very interesting — Examined a very large stock in a 13 frame hive — Has done extensively with sections — Queen nearly three in her 3rd year — Intended to remove her if not already superseded — Very fertile for her age — On one comb of raw [illegible] from honey — almost every cell still is sealed honey — found on one edge a royal cell with small worm crowded with jelly! Comb not visited by Queen — to keep it safe or of another feeling? (19th) 70°.. 86° .. (20th) 72..90.. (21st) 80°.. 92°.. (22nd) 76°..9[illegible] (23rd) 70°.. 92° Last night and night before showers with thunder but none in Oxford — Very hot and dry — bees doing a big [illegible] now on red clover — clover [illegible] gone to [illegible] or dried up — getting well from iron weed — (24th) 72°.. 94° — Bees work well with iron weed — Red clover entirely dried up — (25th) 73°.. 95° — Deaths from sun stroke from all parts of the country — (26th) 72.. 86° — At 3 P.M. yesterday slight showers — North & South very heavy showers — (27th) 66°.. 90° — Very drying day — too dry now for bees to get much from iron weed — (28th) — 70° .. Have been in the habit of putting sealed queen cells in corners of combs in nuclei and in almost any position — am suspicious that bees finding them in unusual places and positions are more apt to get them — On the 26th — put two in proper position in center of comb



as (a) — but one there for has been gotten! (I saw this) a better place for bees to cluster on — if weather settles cool — [illegible] to have it warm again — (27th) Hot — dry — (28th) Very heavy showers all around — Some rain [illegible] (29th) — Cooler — Raised [illegible] in the night — (30th) 56°.. (31st) 50° — Sept 1st — 50° .. (2nd) 48°.. 7[illegible] — [illegible] and [illegible] [illegible] [illegible] — next to no honey — (3rd) 44 [illegible] [illegible] [illegible] [illegible] [illegible] (4th) 46° (5th) 6[illegible] [illegible] (6th) 68°.. [illegible] (7th) 68°.. Some rain last night [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

9th) 56° .. — (10th) .. 74° .. (11th) 48° .. 74° = Beautiful September [illegible]
weather — Bees get a little from buckwheat — [illegible] [illegible] [illegible] —
rapidly — Bees [illegible] [illegible] — the great [illegible] — [illegible]
bees [illegible] rapidly and filling up with honey — [illegible]
[illegible] [illegible] [illegible] — [illegible] to day — [illegible] — [illegible]
[illegible] [illegible] in [illegible] [illegible] — (12th) 56° .. 78° — 13th 60° .. 80° —
(14th) — 64° .. 80 — (15th) .. 74° — A nice rain last night — [illegible] to
[illegible] [illegible] in [illegible] — Bees working [illegible] on buckwheat — (16th) —
Quite warm — (17th) Do — (18th) .. 86° — (19th) 82° — (20th) — 88° — (21st) — Very close —
nice little shower at noon — Full Summer temperature day and night
for the last week — (22nd) Hot — (23) — 87° — (24th) 86° — (25th) 70° .. — Rain
began about 8 A.M. — [illegible] till 4 P.M. — the most we have had for
the last six weeks — a little ran into the [illegible] — none in the [illegible]
gutters — (26) 54° .. 64° — (27th) 42° .. — a little frost — (28th) 36° .. Heavy
White frost — Cucumber and squash [illegible] — Corn — [illegible] [illegible] (29) 38° .. 64° —
Frost — Perfectly clear and calm — Two queens introduced — Saw bees
remove "sting" from one — as I held comb — took wing — [illegible] [illegible]
about an hour — saw another much longer [illegible] — these are facts.
(30th) 38° .. 68° — October 1st — 42° .. 72° = Beautiful day — change threatened
(2nd) 60° .. Very good rain — (3rd) 38° .. 60° — White frost — (4th) 50° .. —
Gusty — raw day — (5th) 56° — Cloudy — (6th) 36° .. — Heavy white frost —
(7th) .. 70° — Splendid day — (8th) .. 74° — [illegible] — (9th) 60° .. 50° — Rain —
(10th) 42° .. 60° — Fair — (11th) 42° 60° — (12th) 32° — 60° — White frost — tomattos,
sweet potatoes vines all killed — (14th) 42° — (15th) 42° — The last [illegible] have been [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] for [illegible]

[illegible]

[illegible]

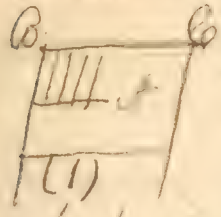
[illegible]

[illegible]

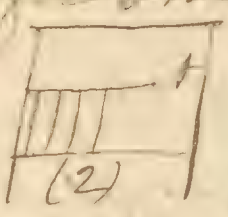
[illegible]

(May 6th 1861)

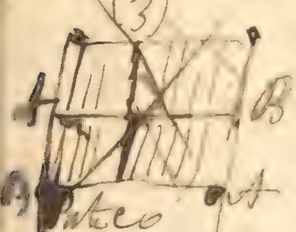
Nucleus-box— When empty hives are on hand make or [illegible]—



— nail a strip for small frames to rest on—on back of hive—or front—



better—it is a ~~[illegible]~~ board ~~strip~~ to make front or back end of nucleus box— If you wish to put one on at [illegible] it and this strip should be [illegible] pieces— side may push in—like my poly hives at [illegible]— [illegible] no top or side [illegible]— [illegible] is [illegible]—



~~In Fig (3) four nuclei are accomodated— AB is 7/8" thicker~~ (Fig 3)

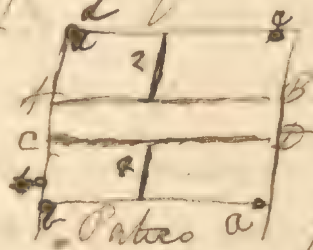
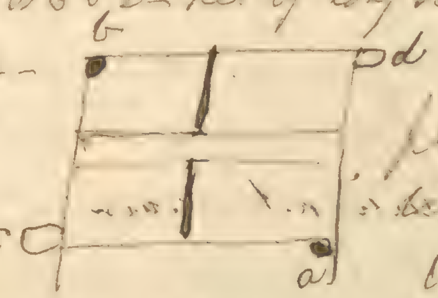
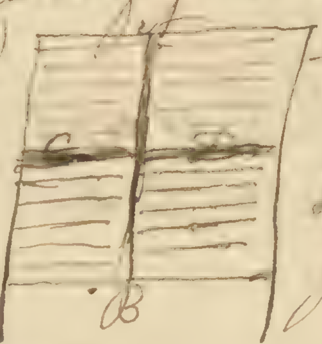


Fig 3 is for four nuclei—each to have four comb— AB, and C D are 7/8" thick and have a rabbet as in Hive No 1—of my [illegible] projects above AB and C. D— [illegible] to cover bars— 1, 2 are [illegible] come flush— AB & C D—[illegible] by long [illegible] or nails driven from outside— entrances at the four corners— & or—



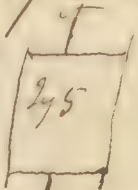
or c and d are 3/8" holes bored (stopped with plug afterwards) and a small [illegible]— this [illegible] from making mistakes— all the frames [illegible] for small [illegible] frames— these small frames must fit up close against front and rear of hive and have their play to the inside [illegible]— (Fig 4)



— A. B [illegible] and to have same [illegible]— If [illegible] to lift easy

7/8"— & 3/8" strip [illegible] to make rabbets [illegible] against— C. D. each 1/4" [illegible] in the needs be [illegible] may have strips on [illegible] sides to [illegible]— should each have a nail [illegible]

size of small frames [illegible] to size of hive— 18 1/8 − 1/4 = 17.875 1/2 of this 8.9375" or nearly 9"— [illegible] 7.5"— 9"— [illegible] then to each nucleus— or if C. D. left out 12 to each nucleus— [illegible]



with A. B. (Fig 5) to divide the [illegible] all the [illegible] may be [illegible] we can [illegible] to [illegible] need not to alter the size of the [illegible] frames I have used for Nuclei

[illegible] put [illegible] in the corner— [illegible] [illegible] with [illegible]—

June 17th. 1852

Nucleus-system — Use nucleus either to build upon by giving comb with maturing eggs — or to stand in place of mixed stocks — Nucleus formed from dividing up a natural swarm — or from imprisoning bees with eggs or combs — for a few days — have not yet tested the last — 15th — If nucleus be used to build upon then wait till Queen nearly hatched — it may be built upon by brood maturing taken from other colonies. This saves moving — and does not stop work — the spaces left by taking away comb — stimulate the colonies deprived — using so much comb keeps them rather bare of honey and gives more room for brood — If shut up nuclei will answer this the most certain and rapid of all methods to increase colonies — 15th — New plan — take away Queen from a strong stock temporarily — when royal cells fairly started — lift out to form nuclei — do it towards night — have a generous allowance of bees — If it will answer better still — Or try lifting out comb with brood — and plenty of bees and see if in this way a nucleus can be secured —

June 26th — Take half comb — bees and Queen for a new stock — moved — put sealed Queen to the other half — try dividing space between them —
June 28th —

June 29th — Two Apiaries best if very rapid multiplica° of colonies is an object — Form nuclei by putting bees to brood comb — let them be bees driven from an old stock — full of drones — carry the nuclei to a new place — half mile distant — when Queens impregnated — use them to make other colonies —
July 2nd — Take comb containing maturing workers with bees upon it — with eggs ~~and~~ or sealed Queen cell or both — shut up with water for a day or two — if the old bees desert — the young ones just hatched will adhere — I think I have got it — If nucleus to be formed by putting some bees adding to 1 comb to aid in 1 matter
July 7th — Think it best not to give sealed Queen to nucleus until they have begun to rear A. Q — fear that they destroy them — If rapid × of colonies an object the stocks relied on for building up nuclei must never be so weakened that they are not able to carry on comb building vigorously —

[illegible]

June

[illegible] (3) [illegible]

[illegible] of bees [illegible] — [illegible]

7 feet — went to Mr Roberts five miles west — [illegible]

[illegible]

[illegible] years

hot — bees [illegible] 1/2 P.M. — [illegible]

[illegible] inches [illegible] about [illegible] —

[illegible] new fence! My deep drains [illegible]

then [illegible]

[illegible]! — Promise of [illegible] clover [illegible]

[illegible] 2nd [illegible] — about 6 inches.

[illegible]

(5) [illegible] hot — [illegible]

in the combs. [illegible]

[illegible]

[illegible]

(1) [illegible]

[illegible] (9th) 45.

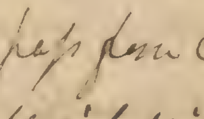
[illegible]

13th [illegible]

Considerable honey – (16th) [illegible]

[illegible]

Feb.y 27th – 1879 – In the Fall of 1874 increasing ill health compelled me to sell all my bees – and believing that the bee-poison was very injurious to me, I entirely gave up all attention to bee-culture – A large part of the time I have been under the influence of my old head trouble – Last September I began to experiment again with a few stocks of a neighbor – and this winter I have resumed my interest in my favorite pursuit – hoping to be able to make the nice observations and experiments to which my bent of mind inclines me – I have a few colonies in chaff wind hives – The Winter has been cold and much snow has fallen in January, the had four successive days - the mean of which was 11° below zero - lowest - 24° - highest - 2° = In a hive with imported queen found some sealed brood on two frames and eggs on a third - colony only fair - Gave one frame of flour candy - outside frame - When this examination was made weather had moderated some - but not enough to allow bees to fly more than enough to empty stomachs - Next examination showed many bees had hatched - candy much eaten - good spread of brood - most on frame next candy - bees seemed to be working on the candy nearly all the time - and it seemed as tho it was constantly stimulating them like constant feeding - Early in Feb another very severe spell - -2° one day - zero next - Heavy snow On the 20th weather more moderate but no bees flying - Examined - very many bees hatched - good spread of sealed brood - but few larvae unsealed - and only a few eggs - showing that breeding had been suspended during the very cold spell - and the eggs and very young larvae removed - (Feb 25th) Warm - maximum 60° - bees in full flight - A large spread of eggs and larvae - and the colony in fine heart - In the Apiary of a neighbor - very much stronger stocks in their hives with chaff cushions and division boards had no brood at all - bees had no winter passages - In apiary of another neighbor - in their hives with winter passages - some brood but very little compared with mine - I have kept an old comb over mine and the bees always cluster under it - have even put honey in it - It forms the winter shell or chamber to allow them to pass from comb to comb - (26th) 7 A.M. 28° - 7 A.M. 16° - 9 A.M. 14° - Furious wind with snow flurries - Gave stock a flat bottle of water with slot in cork so that they could get water from it laid under the cushion - Saw dust at entrance unfrozen - and bees coming out and turning back - a few actually took wing - and were lost - closed the entrance with saw dust - (27th) + 2° .. 22° = clear, calm - examined when + 10° - bees on the cork of water bottle - ! (28th) 20° .. 48° = Removed cover and chaff cushion - on lifting up the carpet over the bottle a string extended to cork - Cover and quilt off some time bees retreated from bottle tho' covered with carpet - Examined combs - Saw cluster on candy - eggs and young larvae plenty - brooding hardly at all checked by very cold weather - I now form the winter shell or chamber of an old comb - and put carpet over the comb - hole in center of comb - Bees not at all disposed to nibble at carpet - as tho it was next to them - If food is to be given on the comb, small sticks should be upon it, to allow bees to get it - D. A. ~~[illegible]~~ Cook of this town showed me the following plan to give bees water and candy - devised from my conversations with him -

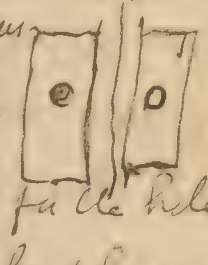


3, 4 flour candy poured in to the box - 5 a flat bottle with good [illegible] - so that bees can use it - If chaff cushion

1, 2 wood to fill up frame sized box [illegible] had a good [illegible]

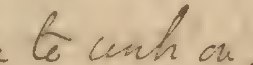
and bottle went down in it covered on top with wool I think it would be better - only a small slot [illegible] to come over hole in covering comb - when bottle not in use hole in chaff cushion that can be covered [illegible] - This accomplishes without lifting cushion or disturbing bees - Honey if needed [illegible] with [illegible] in bottle feeder - Candy and water given after good cleansing flight - if the season is right to encourage breeding - March 1st to 6th - [illegible]

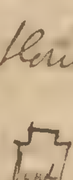
In central part of hive are a pound or so — 4th Believe there was no flour in that candy! Iodine [illegible] stimulus is in [illegible] candy and the bees used the bee-bread! Shall examine tomorrow to see if they have bee bread yet — the sight of the strong neighbor's stock with no brood — having no winter passage so- suggest one reason for bees in old box hives being usually so much stronger in early spring — they can communicate freely — Queen not much disposed to lay when she cannot freely pass from comb to comb — An old comb reached and winter passages and the combs where the main cluster is a little wider apart will remedy all this — In case of the new twin chaff hives to which old colonies transferred find bees well up to the thin central partition — To get the winter a clear chamber in twin hive — simply nail 3/8" strips to the uprights of frames of old comb — let the upper edge or top of frame be kept about 1/4" from the partition — thus



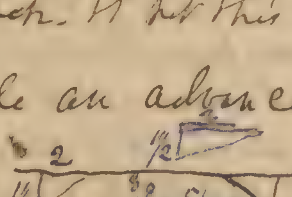
Lay carpet over the tops of all the frames — With chaff cushions confine bees to the proper space — Hole in cushion for bottle water or liquid feeder made so as to come right for the holes in the covering comb — Good care taken in preparing bees for wintering to have plenty of honey in combs near the partition board of the two hives — I believe in this way bees will winter in the open air for all general purposes than in any other way — March 4th 34°..46° — Bees not flying — Brooding about all suspended in trial hive — only a few larvae bee-bread all gone — Iodine test shows no flour in the candy — Gave comb with some bee-bread — 5th 36°..50° — Dense fog then beautiful calm day — put flour on shavings in [illegible] boxes — put comb to allow bees — soon began — then heavy work — 6th 50°..60° — Heavy rain in A.M. — P.M. cloudy — bees working on flour in the boxes covered — lid open enough to admit them — Trial hive had much flour in cells — Gave them plenty of bee-bread in a shallow chamber frame — Bees must moisten flour with honey to pack on legs — In natural pollen it is damp enough to pack — or they get honey from blossom to pack. Is not this the reason they cease to work on flour when natural pollen abounds! then honey is found

To day made an advance on my frame —





When driven together wire — bottom



corners nailed — no dovetails needed! very stiff frame — The uprights may be only 1/4" scant thick — as the corners give strength just where it is needed — bottom rail may be used — would not be wanted except when used in upper story —

30° [illegible] flour — 7th 40°..50° — Rainy a little A.M. — A little work done on the flour — 8th [illegible] 70° — Summer like — bees working on stimulated by flour — (9th) 50°..72° — Occasional showers — wheat, barley, clover looking unusually well — peaches gone — (10th) 50°..74° — Bees work on red maple and Arbor Vitae — Thunder showers — 9 P.M. — Tremendous shower — heavy thunder

11th 40°..50° – Bees work but little – 12th – 28°..50° – Bees work but little – Examined trial hive bees have made a great spread of brood for their numbers – There was flour in Root's candy – but not enough could be got – & could not soften and assimilate ~~enough~~ to feed the spread of brood lost before this last started – so that when all the pollen was used up it had to perish! – If this hive had not bred in winter it would now be very weak in bees – Bees have begun to build comb in the space where they have used up flour –

13th – Pleasant – almost [illegible] 14th – Do – ~~16th – Cold~~ – 15th 18°..34° very cold wind D.A. McCord finds bees work well on his candy with much flour in it – when he has mixed it a little of water with loaf sugar – Bees keep quite a patch wet – and do not drop [illegible] on the Bottom B. – As in Root's Candy. Reason why bees found with breeding suspended March 4th – was because could not get flour enough – (16th) 16°..30° – 2½ P.M. – began to snow – [illegible] over four inches fell – 28° – (17th) 22°..30° – Clear – Bees in trial hive have not taken in [illegible] little – Examined carefully – and removed two combs not needed to condense them more – Breeding not interrupted by last cold spell – that is no eggs or larvae eaten up – showing that the trouble before was want of pollen – Examined D.A. McCord's colony where they have made good progress on the candy with much flour – Breeding very regular – (18th) 8°..28° – Close examination shows a little more progress in eggs – of course breeding not advancing so rapidly as if it had been warmer – but no going back – It is now easy to estimate the great loss from suspension of breeding and loss of eggs and larvae when pollen supplies gave out – No bees have been hatching for some time – Read in March 1st No of Horticultural Journal (London) March 6th – Todd's experiments with eggs and milk fed in Algeria in Dec. last – and [illegible] Dec 1872 – W. Raitt (Scotch) was a little before me in noticing winter breeding from flour candy – the idea that candy is a constant stimulus to breeding in a warm hive in cold weather even if it has not flour enough so that they must use pollen is I think new and mine – 19th – 12°

20th – Cold – 21st – Flood of rain last night – 22d – Bees fly a very little – 23d – [illegible] –

24th – Bees worked bringing a few pollen (25th) 28°..4[illegible] – Examined trial hive and McCord's – Bees in both have gone on breeding – In mine many hatching eggs and larvae in all stages – Gave candy with more flour in it – W. McCord says his bees have no young larvae –! Candy – pure best when bees have too much pollen – Candy feed when bees have sugar – advantage – to keep bees at home when no honey, and they get [illegible]

Have been to Dayton since 21st – Mr Perin's bees have done very well on flour candy – Got from him a good plan for getting guide strip in saw kerf made in strips from wh. corners or holes are cut – This seems to put finishing touch upon my improved frame – as it enables us to make frame lighter and very stiff – and gives just the surface against which to fasten fdn with wheel roller – (26th) 42°. 50° – Heavy rain with thunder – The examination of trial hive yesterday showed that the bees resumed breeding as soon as pollen was supplied – hatching bees prove this – In a stock with candy on frame – bees have [illegible] bud to replace candy eaten out! (27th to 31st) Cool for the season – cloudy and rainy – bees fly very little – April (1st) 26°. 44° – Cloudy mostly with a little rain – Sun shone out P.M. at intervals – and bees flew a very little (2nd) 21°. 48° – Some flour taken – Bees have gained very little from the maple, elm, white poplar – Severe freezing killed nearly all of the pollen buds – Before 10 P.M. began to rain – (3rd) 18° to 30° Not much rain – slight snow – at 4 A.M. 22° – very windy – (4th) 22° – (5th) 22° – (6th) – Bees flew well – 7th Rainy – P.M. bees flew some – (8th) [illegible] bees flew some – 9th Cool – ~~rainy~~ ~~no~~ some flying – very little pollen – 10th Raining – no flying – (11th) Cool – but little flying – (12th) 26°. 54° – Bees very active on flour – Whenever able to fly the past week bees have been greedy for flour – very few bring in pollen – refuse of flour in flour feeding boxes is quite sweet – showing that they moisten with honey as they take it up! Mr Cork's bottle and flour and sugar feeding frame a success – bees eat flour candy – also ~~flour and~~ sugar – Trial hive has not stopped active breeding – brood in all stages – a piece of drone comb that had young drone larvae and eggs lost its larvae and after a few days more eggs laid – drone comb was on the outside of main brood – this shows a very refined instinct – queen declined it for a long time – then bees "went back on it" because of unreasonable weather – then queen began again – Of course not so much progress made in breeding as if weather had been warmer – Trial hive is now very much stronger than those which were say more than twice as strong as when experiments were begun – Ten days ago – Honey board in two parts (for twin hive) divider confined bees to proper number of combs next partition – the fewer the better (say five or six) which will hold the bees – over the part of hive holding bees sets a shallow box with very thin slats laid on strips forming 1/2 or 5/8 in shallow chamber – arranged to get in box flour candy – [illegible] – water bottle with Mr Cork's wick – liquid feeder &c – all feeding of every kind to be done without removing frames – right where heat of bees ascends – ~~cut honey off~~ to push down ~~into the~~ box – when season for emptying comes – second part of honey board takes place of winter [illegible] – (13th) 48°. 64° – (14th) 54°. 64° – Bees get a trifle of pollen – (15th) 42°. 45° – no bees flying – 16th [illegible]°. 52 – Rain – N.E. No bees flying – Durham [illegible] 16th – but [illegible] worked comb with.

eggs of Imported Queen to a colony sent me—catching out their queen cells—queen having disappeared in transport— Bees from dark imported queen very handsome both for color and shape—[illegible] in [illegible]. Let alone this colony would have dwindled down to a mere nucleus—

This a.m. got Mr. J. Dunham's letter about giving ~~rye~~ flour in the combs (rolled in) to his colonies when putting them into winter quarters— Very Important? May not flour syrup be safely fed to bees in September especially in regions where pollen is scarce— so as to be stored in cells—sealed over! It would be deposited centrally about where it would be needed either for breeding early or for the ~~young~~ old bees— While bees can live on honey alone, may not pollen lessen the amount of honey needed and make them more vigorous? I believe that its full importance in the economy of bee-life has been greatly overlooked (19th) 34°.. Strong very raw N. E.—

June 30

Journal for 1881 — Taken with old trouble after last week— [illegible] Christmas 1881— Unable to experiment on account of effect of bee poison— [illegible] with [illegible] [illegible] weeks ago to [illegible] [illegible] using them for many years and then giving it up for some years [illegible] same as for old [illegible] [illegible] time [illegible] for his system gradually to get accustomed to the poison— Having kept bees for [illegible] years I became accustomed to their poison— Giving up [illegible] with them for some years when I resumed I was most affected [illegible] that for [illegible] change in my system I could no longer safely handle bees— and [illegible] to protect myself from the poison—instead of [illegible] thinking that by [illegible] I should regain my old indifference to it I began to work with them for a week—and [illegible] results—breathing the poison [illegible] [illegible] I find that it [illegible] [illegible] [illegible] — June 18th [illegible] [illegible] with [illegible] [illegible] [illegible] not be [illegible] the comb but [illegible] off as easily as dark bees! [illegible] 309

[illegible]

He is a plain man of German origin [illegible]
[illegible] and [illegible] for honesty — Mr King Kramer, Dent. Hamilton
[illegible] — These are the notes I took of our interview — Am 50 years old
[illegible] kept bees — am very fond of them — and have had to do with them
[illegible] of — [illegible] of my own, six or seven years.
[illegible] and [illegible] hives — In 1879 had a queen which could
[illegible]
[illegible] — In September 1880 made further experiments — I lifted
up two frames of brood and bees into 2nd story of Langstroth hive
[illegible] which honey board between the stories. [illegible]
the honey board to let the old workers return to parent stock
[illegible] the top of a 3rd story with thin white muslin — In these
[illegible] them a queen cell which hatched in about 8 days
[illegible] hatched drones out the muslin; the [illegible]
[illegible] cells — Three days after the queen hatched left an opening
[illegible] part of honey board to allow the bees to go to the [illegible]
Had three colonies [illegible] in this way — the bees [illegible]
[illegible] the third story [illegible]
[illegible] to the [illegible] at [illegible] the entrance of hive [illegible]
did not [illegible] thought it a failure and killed one of the queens — would
have killed the others but for the suggestion of a neighbor [illegible]
to have like [illegible] queens — [illegible] them [illegible] with eggs and next day they
began to lay — kept the nucleus over a full stock for the sake of warmth [illegible]
[illegible] the muslin [illegible]
[illegible]
4 sent for G. S. Hill & C. J. Muth — Hill came and found the queen laying [illegible]
K for [illegible] of the [illegible] — the muslin white [illegible]
21 [illegible] about 1 [illegible] — [illegible] had been hatched [illegible]
0 yellow bees and comes with some [illegible]
3 they wintered well — Mr Kramer showed me the [illegible]
were — [illegible] were sisters — and the drones were from the same queen [illegible]
1 310 [illegible] — Mr Kramer [illegible]

to compare the bees because he thought that both queens are done [illegible]
up their heads against glass - and see them not their [illegible]
1 [illegible] - Frame without bottom. Have a number of them in the [illegible]
[illegible] - like them far better than any frame yet - have out
a number of them nearly worked out into upper story to see whether bees work
faster there down to the tops of lower frames - if they do not [illegible]
in the [illegible] - so little wood to be kept warm - so much economy of room
for [illegible] - and so stiff - and let bees right down on to the bottom board -
Before the corners are cut out, the [illegible] slots cut [illegible] so that 48
[illegible] needed to fasten [illegible] into corners before they are nailed - [illegible]
[illegible] made corners just right for [illegible] to be on one side, and yet
be in center of frame - This style of frame could be made so much lighter than
the [illegible] ones and so much cheaper that it will be preferred.

July 9th – 1852 –

Nucleus Plan }
Rapid increase }

May 15 – Have a large number of nuclei formed – N

If a few strong stocks were kept about a mile from the main Apiary – in a tea chest box – a dozen combs with eggs of workers all covered with bees might easily be carried by one person – these put into as many different hives in the main Apiary – the most of the bees will adhere – by last of May – or just before young Queens hatch – the nuclei may be strengthened by having one comb with maturing workers – as soon as the young Queens commence laying – give them one or two more combs with maturing brood – they will now be able to build new comb and will advance very rapidly – Nuclei may be formed in any of the ways mentioned – the stocks which are to build them up are never reduced so much in bees that they cannot build comb vigorously – their energies will be given to comb building and brood rearing – they will have but little honey and may need to be fed – but if they have comb a small expense in feeding will make them safe – 1st of June form another lot of nuclei – and 15th of June another – Say that I have 20 strong colonies in Spring – form 40 nuclei 15th of May – equivalent to two combs with bees from each hive – 1st of June – 40 more – these first to have ~~two~~ one combs with maturing workers – this will take ~~three~~ four combs from each hive – 15th of June 40 more – the last 40 to have ~~two~~ one combs of maturing workers – this will take four combs from each hive – 1st of July the last 40 to have two combs from each old hive with maturing workers – 14 combs have now been taken from each old hive – and they will not be injured by the operation – allow 20 for failures – and the colonies have been multiplied six fold – and in a good district and average season they will not need much feeding – If only one half this could be done so as to get a three or four fold increase what an impetus will be given to bee-culture –

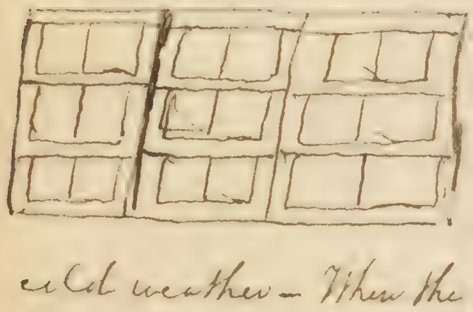
July 19th – Let Nuclei be formed say in June – and strengthened a little in July – so as to keep colonies strong to gather honey at the right season – when buckwheat is in blossom then build them up to the required strength – (20th) If bees are not working briskly when you wish to catch by moving – you may feed in open air until they are flying strong =

Nucleus – To get brood comb for – Cut out of side and bottom of comb enough to make comb for a small frame – as soon as bees replace and eggs are laid – cut again – second time cut very early – then again be –
(May 4th 1861)

Nucleus box – see N.O –

Observing Hive — It is found almost impossible in our cold climate to preserve bees in an observing hive — I have invented a plan by which they may be allowed to cluster in the winter so as to preserve their animal heat — If the inside of their hive be covered with flannel they may be kept warm and free from moisture so apt to breed dysentery —

Dec 17. 1851
Obsng Hive —



Here is a rough sketch of an observing hive on an entirely new plan — A series of my movable frames are inserted — about 3/8 of an inch from each other and from the sides, bottom and top of the hive — As soon as the breeding season is over these are all removed and placed together in any box just as the frames in my practical hives — and of course need no unusual protection in the cold weather — When the Spring is sufficiently advanced they are placed again in the observing hive — The only objection that I can now see to this — is that the Queen might conceal herself between the frames — but as on my plan the bees in an observing hive work in the light — and as she will have to be on the combs a large part of the time to lay, she will soon lose all shyness — Brood comb might very easily be taken for any purpose — and such a hive will be in many other respects most admirably adapted to the extended purposes of science. Unite this plan with that of my open hive, and you will have very extraordinary facilities for observation — at all seasons of the year — Even if bees winter in common observing hives they are feeble in the Spring and not being able as in common hives to economize their heat to the best advantage — it will be late in the season before they become strong — My plan allows them to be cluster and increase in the usual manner until the season admits them to be put into the observing hive — I have tried the plan of giving them more room to cluster in winter but find that it does not answer — the bees drop down and are not easily able to rise again — the moisture on the walls gives them disease — No amount of protection in our climate will keep them in such a hive in winter in the open air — As the Queen keeps on the combs she will be able to be seen easily at all times — in my hive Dec. 17. 1851 —

Nov. 25. 1851

Open Hive

I have this day brought my conception of my new plan of a hive to what promises great practical results – ~~While~~ My open hive ~~gives~~ offers the greatest advantages to three classes of persons.

1. The Scientific Apiarian whose great object is to investigate the habits of the bee. He has a hive where in a few minutes every comb may be examined – Hubers hive to say nothing of its cost cannot be used without injury to the bees – and the work of ~~every~~ removing the frames for inspection is tedious and difficult The common dividing hive expensive – and a very difficult hive in which to preserve the bees over winter – In my hive he may with the greatest ease perform all the various experiments necessary to arrive at a more accurate knowledge of the habits of the honey bee –

2. The Practical Apiarian who wishes for profit to manage his bees on an improved and scientific system – finds in the use of this hive the means of making artificial swarms, rearing artificial Queens, supplying destitute hives with honey or brood – obtaining honey for sale in the market for immediate consumption or for in boxes or tumblers just as may be most profitable – protecting his hives against the moth – and in short of performing every operation that may be desired in the Apiary.

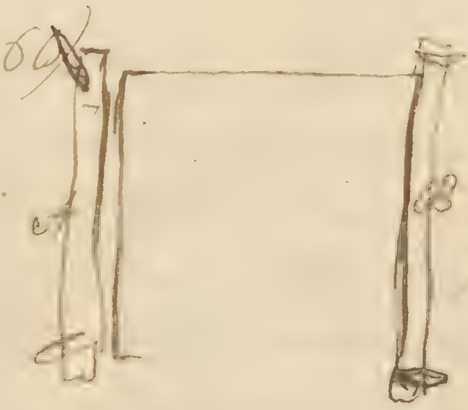
3. The Hive will suit the farmer who manages in the old fashioned way – as he can get honey at any time &c

Sep. 10th 1852 – Where the bees can be protected from the weather and from the sun – they may be ~~hived~~ kept (perhaps only for experimental purposes) in the frames without any cover – the frames being properly suspended may when the bees are first hived be protected by a cover which in the course of a week may be removed – Of course this plan will answer only in warm weather –

Nov. 22. 1851 – The cover may be kept a few inches from the frames – in this way the bees will I think confine themselves to the frames as long as they had cover. –

The supports for the comb might be of the very simplest construction – say four posts on to which front and back rabbeted pieces are nailed – Now let the box have pieces of wire half an inch high nailed in its corners ~~and~~ it may be taken off and put on without injury the bees – it might be kept off the most of the time in warm weather when the hives are under cover – Such a hive for experimental purposes will be admirable – the ends might be slid out from the sides – and the hive be made more than one story high – The outside case for warm weather might be of paste board – another case of the same kind with smaller top will admit of packing for winter – or the paste board cover might be double with cotton between – thus very light and warm

(March 15th 1860)
"Open Hive"

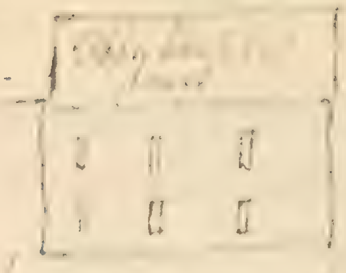


Let the frames be suspended on an iron or wire rod — such frames by [illegible] wire — to keep apart at the bottom — the whole fixture for suspension might be of cast iron and screw down to the bottom — beyond by keeping the frames apart below — the point on which they rest may be [illegible] — [illegible] at price of [illegible] [illegible] by [illegible] like the [illegible] (see Fig. 16th of my book) — to hold outside case [illegible] board — when pressed against it [illegible] made [illegible] pins [illegible] to keep it pressed — one end of the case [illegible] to that case [illegible] [illegible] away from [illegible] to [illegible] it — [illegible] A. or B. — so as to get the [illegible] — [illegible] to [illegible] from [illegible] — whole [illegible] of case might be [illegible] — [illegible] case [illegible] up from bottom board [illegible] — [illegible] B — [illegible] off to [illegible] — Might the case [illegible] at present to [illegible] [illegible] of honey [illegible] — Frames might have [illegible] or [illegible] on top [illegible] that when the frames are pressed [illegible] — [illegible] go [illegible] to allow the frames to be pushed close together — A clamping or holding fixture might also be used to keep all the frames together [illegible] on top and below so as to allow of no [illegible] of the bees [illegible] of the case — [illegible] be [illegible] on the inside [illegible] so as to [illegible] bees [illegible] at — the [illegible] may be [illegible] and [illegible] — the [illegible] [illegible] may

hole to [illegible] the [illegible] [illegible] on the same [illegible] [illegible] — [illegible] might be [illegible] off — 16th) [illegible] the plan of my [illegible] hive is [illegible] much better one than this of an open hive [illegible] [illegible] on the upper cover — then the [illegible] slides off with honey board —

i O

[illegible]



[illegible] 1/2 mile [illegible]

[illegible] the hive can be made [illegible] that the hive is not [illegible]

[illegible]

O o

[illegible]

[illegible]

[illegible]

[illegible]

u O

[illegible]

March 8th. 1852 Outside Case — after being made should be cut in two and then upper part hinged —

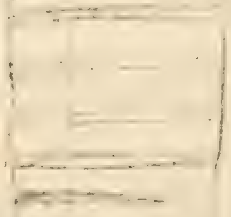
[illegible]

getting [illegible] — should be ~~[illegible]~~ [illegible]

[illegible] on ~~[illegible]~~ one of sides of case [illegible]

[illegible] 1/2"

[illegible]



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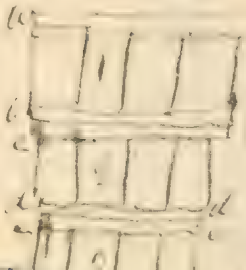


[illegible] 1 1/4 [illegible]

[illegible]

Easy in this way to get two tiers of boxes [illegible]

[illegible]

[illegible] 1/2" [illegible]

[illegible]

[illegible] 10 inches — and then [illegible] can be 5" in the clear [illegible]

[illegible] In old style of hive [illegible] be 4

[illegible] outside ones 3/8" wide [illegible]

1/4 [illegible]

[illegible]

Prayer, Insincere, horrid of painted in a masterly style. Shake. Hamlet.

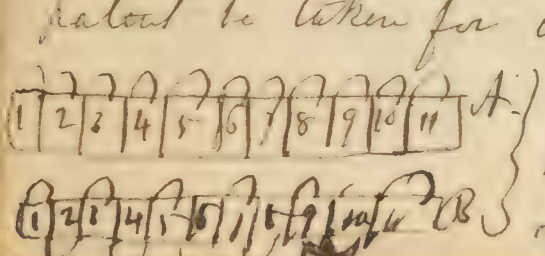
Paradoxes, Ingenious attempt to account for the impressions frequently made by them. (Burke's Works Vol. 1. P. XXII. XXI)

Patriotism, inculcation of not neglected in N. T. R. Hall. Vol 1. P. 206.

Patent Hives. — It cannot be expected that persons who are content to remain in almost entire ignorance of 1 habits of 1 bee will ever have much success with improved hives — such persons are only fit to use 1 common box or straw hives on 1 old plan of killing 1 bees — and they will in 1 long run have more success on this plan than any other — all that they need to know is how to hive their bees when they swarm — and how to kill such as they mean to take up — From this system of management sure results may be attained — As all feeble swarms are taken up in 1 Fall + increase of 1 moth is discouraged — I have little doubt that in this way more honey will 1 attained on 1 whole than is now attained — It is more cruel to starve bees in 1 winter than to kill them at once — In a word 1 old systems of management should be adhered to by all who are either too careless or too ignorant to adopt 1 new — Those who mismanage 1 new do not attain as great an increase in 1 number of their colonies as those who adhere to 1 old = If any change is recommended to those who will not take 1 trouble to acquaint themselves with improved systems of managemt — it is to keep the larger part of their colonies in non-swarming hives with ample space for storing surplus honey — and to keep some in swarming hives to increase their stock or keep it good —

Paint — White best to resist sun — reflect heat. — inside — and under work might be mineral paint — first coat of hive also — Seneca oil with rubber dissolved — mixed with lead — or mineral paint. —

Patent April 27. 1852) Let Agents as far as possible be discarded — sell no right to make glass hives — Let self supporting Apiaries be established. April 28. 1852 — Let patent be taken for arranging the hives — leave openings for ventilation —



} Let A be spring position — when gathering season comes — let it be B. thus very strong stocks may be made for surplus honey gathering — *

Pasturage. — It will be difficult to supply this by artificial means unless the common consent of those living in one village or neighborhood can be obtained — An Apiarian society might be formed in connection with a horticultural — and the setting out of such trees as are favorable for bees encouraged — If the following things abound bees will find the most abundant pasturage — Willows — Maples — (Red ~~and~~ Sugar &c) Fruit trees — Tulip Poplar — White clover — Bass Wood — Buckwheat — Lombardy Poplar
The attempt to cultivate in gardens flowers for bee-pasturage amounts to very little. If a large garden was entirely devoted to this purpose it would hardly support a single hive — With the exception of Trees which are ornamental and yet which abound in honey we must rely chiefly upon the natural supplies of a country — The grand desideratum is to find a clover that like the white clover and rich in honey like the red — and like the red blossoming abundantly during most of the honey season — When this is obtained and can be cultivated to as much advantage by the farmer as the red clover — vast quantities of honey will be obtained —

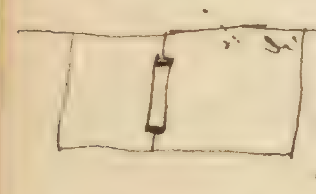
X Vide page before — April 30th 1852 — Let plank for floor be double — tan between every boards double — tan between in winter — place tan on earth — salt — May 1st — Let slope be of tan — less trouble than grass —

It is very [illegible] to keep the [illegible] to have a more [illegible] needed tacked in the corners of [illegible]
May [illegible] 1853 — [illegible] — [illegible] to be better than [illegible] — the bees [illegible] very little [illegible] to fasten bottoms of boxes unless they [illegible] — [illegible]
[illegible] — Easy to put in these tacks or sheepskin — and when boxes set on [illegible] so as not to come over spaces — Holes are made in bottoms of boxes or central [illegible] Plan for two tiers of boxes — ~~Lower~~ 1st tier 6¼" high [illegible] thickness of top and bottom — 2nd tier 3¾ high — the low boxes to have holes in [illegible] about 1" or 5/8" in diameter and placed near corners ○ ○
[illegible] in [illegible] just [illegible] and the [illegible]
[illegible] on [illegible] and place [illegible] on [illegible]
[illegible] and [illegible] the [illegible]
to hive — the low tier [illegible] the [illegible] in upper ones [illegible] to get [illegible]
[illegible]

Perseverance, argued from the joy of angels over pen.t sinners. 3.

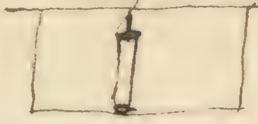
Patent — Claim feeder — claim arrangement in bee garden — claim Queen nursery —

Winter Passage Jan. 27th — 1865 } To day a new plan for long narrow winter passage has inserted, for which I am in part indebted to suggestions of Sheldon — who hung his above and below — with [illegible] end — then again, above and seeming below his suggestion — 1st Get out thin shavings of [illegible] or some elastic wood — 7/8" wide — cut them to proper lengths — Have strips 7/8" x 3/8" x 1/4 — to nail and clinch the shavings to —

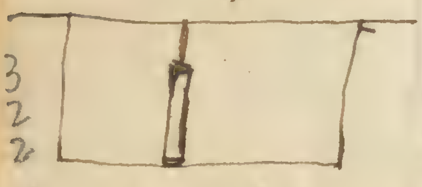


To do this quickly have a small box without top or bottom, length and width of the shavings — deep enough to lay one in (on an iron bottom) then to [illegible] a block 1/2" shorter than box — so that the two 7/8" x 3/8" x 1/4" pieces can go in next at each end — then put in the other shaving — [illegible] nail shavings to end pieces with small nails that will clinch on the iron — Have pieces of ~~galvanized~~ very fine annealed iron wire which twisted round the 7/8" x 3/8" x 1/4" pieces and then over top and bottom of frame will hold the winter passage firmly in place — Make the shavings 5 1/2" to 6 inches long — If these winter passages can be made (as I suppose) cheaply they will as the suspended shaving make the bees build straighter comb, by beginning at a, a — instead of centrally —

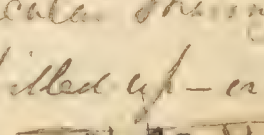
It may be that the shavings can better be glued to the end pieces than nailed — It may prove better to fasten thus —



having the top wire about 3" long and making the bottom to be ~~wired~~ wired directly fast to the bottom strip of the frame — If the bees would not fill it up a slit 1/2" wide will be better than 3/8" — room to set in a queen cell — If bees fill up this slit very easy to keep it clean — much more than shaving with wire —



Nov. 6th — Have to day brought long slot shaving winter passage to suit me — I use hickory or some other tough shavings — lap the shaving and tack — so as to clinch — the lap to the bottom nail — then suspend with fine annealed wire twisted over the top of frame — to prevent wire from cutting through shaving use a small piece of shaving to make a double thickness at point of suspension — shaving might be suspended with a piece of fine twine — Let the length of passage be six inches — Cost of this not much more than suspended ~~circular~~ circular shaving — and it is every way better — not near so liable to become disarranged — or filled up — or mussed by contracting bees — and if filled much easier to be cleaned out —



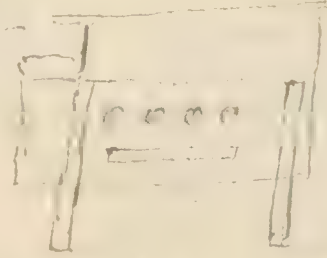
Bees will have to begin combs at a, a, and will work towards c, c, to make the edges of comb meet — they will run them down to x, x, so as to fasten them against shaving and make a stronger support — thus a good comb guide —

Pasturage

Hybrid Grass or Alsach Clover — said to have all the virtues of the red with the properties of the white — as to size of blossom — if so — a most wonderful desideratum has been found —

Sem Flower — Blossoms late — why not raise it as a crop —

(Note on long slot shaving passage) In saying that this long slot will make combs go straighter and not have the opposite effect, I give of course only my own opinion — the bees must have the matter submitted to them before it will do to make too positive an assertion — I am exceedingly desirous of getting rid of the waste and trouble of cutting out the passage — and to make provision for the many bee-keepers who will never attend to cutting — [illegible] the [illegible] boxes to hold small boxes — 6¼ high — In the ends of these [illegible] boxes [illegible] about 1¼ inch holes — same to correspond in [illegible] — [illegible] have — these holes to come half way [illegible] — [illegible] bottom [illegible] to come [illegible] with bottom of [illegible] bottom (of box) nearest to the sides [illegible] rest on a shelf — the hive [illegible] [illegible] excellent opportunity to use small boxes — [illegible] be about 30 lbs more of honey — [illegible] more heat — [illegible] outside boxes [illegible] — Would set side large boxes [illegible] more [illegible] well [illegible] ledges of hive [illegible] [illegible] also [illegible]



[illegible]

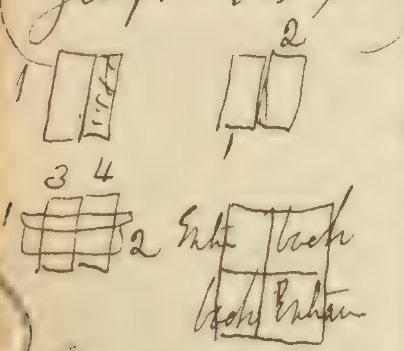
9th Set side receptacle box. Have bottom 7/8" thick ends and top 1/2" — To fasten, dowel pins, nails or long screws through the legs into upright of box — one to each leg — same through ledge of hive into top of box — keep top of box well up to ledge — Front of receptacle box set in a little — one nail or dowel entering upright from inside holds in place pack round with wool, woolen rags &c — In making small boxes make some with inch and a quarter hole in both uprights — inside row would need no slide — outside have small piece of glass on outside hole — any piece of broken glass with a little [illegible] to hold in place or tacks — one whole goes against side of hive the other to see through — Set boxes to begin on top — then set on sides!!! Now

See Over

Pollen — Of great importance — Young stocks cannot begin early breeding often for want of it — It might be well to change some of their frames for those of old stocks which are apt to have too much of this article — & substitute empty to be cleaned — But if a surplus of one hive be made to compensate for a deficiency of others there will be a great gain — Old stocks soon accumulate an surplus of bee bread which may be exchanged to a best advantage for the combs of new stocks which are deficient in this article.

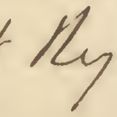
Capping of brood — does it not require pollen?

(Pile of Hives — July 1st 1854) Begin with one — Have proper roof for whole pile — facing South — Next year set new swarm where old one stood — put old one ~~aside~~ but facing South — Next year — put new ones where old ones stood — old ones facing one East other West — Next year ~~old~~ ones where old ones stood — old ones — 1 facing East — 2 West — 3 North 4 South — When Q. Q. are impregnated those facing North and West can be moved to S. and East — Next year a new pile may be begun — place 1, 2, 3, 4, 5, 6, 7, 8 old hives in the new pile in their proper quarters — 9, 10, 11, 12, 13, 14, 15, 16 new swarms in old pile 9 N 10 S — 11 E. 12 W — 13 N, 14 S. — 15 E, 16 W — after Q. Q. are impregnated face all E and S. — If old stocks just after swarming retain the strong impulse — then move them to positions where Q Qs are not lost — will not weaken them — If they do not have this impulse — a few of the bees of swarm may be returned or next to them — say a quart — these will keep up work of the hive — or — after if the swarms are formed artificially the old ones may remain on their usual stands — and the forced ones be put where the old ones are to be — and in a few days the change be made — it ought to be made first day as soon as a good number of bees are at work who have marked new position and will return to it — or if delayed over one day it will be best to delay it about a week — so that a great number of bees hatching will strengthen up very much the forced swarms when change is made — If done first day — no fighting — If delayed — must be made to smell alike — some musk in each hive — (See next page)



Position, as guiding the flight of bees – (June 19th 1854)
I have noticed for some time that bees are guided much more by difference of elevation than longitudinal difference – in finding their way to their own hive when the hives are near together To day I noticed bees on the Protector which had been hived for 6 days trying to enter a shut up hive of the same size, close &c next to them – Putting on the empty hives & colored traps they did not notice it near so much – Set an empty hive over one hived only three days: differ in height one foot – bees took no notice of the empty hive – This condemns the Protector – and decides for the piling plan –

Piling – (June 20 1854). Have glass in the back door of piling hive – to see what bees do – they ought to be allowed to seal up cracks – If not they are suspicious that honey will be taken from them –

(Piling continued) Before turning hives round to the proper faces the bees should be allowed for a few days to enter at both ends – they may then be changed without so much annoyance to them – If 12 are to be put in a pile then when it is an eight pile – four old ones are to be put on top one for each post – and four more are to be removed for new pile – unless the pile is to contain sixteen – eight the most convenient – for use and unless in rare cases where room is much wanted will be better than any other number – care to move &c the expense of two roofs smaller – compared with advantages –  four posts – for pile – ~~1½~~ 2 feet high – boarded top all round – just dimensions of two hives – causing winter board to screw into these – keep cover hive well warmed – fill below with straw &c –

Popery. not the creature of papacy, but its elements at work even in the Apostolic age. (Spir. Despotism. P. 248.—)

Protection against extremes of heat or cold a grand desideratum— In our climate "Utraque vis metuenda apibus." Virgil The cold of winter especially fatal— It often kills small swarms by preventing them from keeping up heat. It often starves bees with plenty in their hives by confining them to one part of 1 hive— it often destroys so many that they are left in 1 Spring too weak to be of any value— It often causes such an amount of dampness in the hives that the combs mould and the bees are made unhealthy—
A hive very simple in its construction—any ordinary box—cannot guard them against these extremes—any more than a thin house can protect human beings— The material must be very thick or the hive in some way made double—the former method too expensive or too clumsy if hive permanently double—too warm in summer— An outside cover wh. can be filled with saw-dust or some good non-conductor—in winter—and a bottom filled with 1 same—will enable 1 bees to keep warm and dry— If 1 weather suddenly changes to warm—and is unsuitable for them to leave 1 hive—they will hardly feel 1 change—and may be shut in— If it is desirable that they shd feel it and leave to cleanse themselves—1 bottom board may be lowered and in a moment the whole hive will be pervaded by 1 external atmosphere—
Want of protection in 1 winter 1 greatest obstacle to 1 successful management of bees in cold countries— The warmer and dryer that bees can be kept in winter 1 better—if 1 warmth is from their own natural heat—
Frost on 1 inside of windows shows what takes place in many hives—difference between a house furred out and one plastered on 1 wall illustrates 1 difference between different kinds of hives— A stratum of confined air found to be one of 1 very best non-conductors— In glass hives if the glass is single 1 bees will not cluster against it in ~~warm~~ cold weather—but if double with a stratum of confined air between they prefer it—~~and~~ I believe that I am 1 first person who has used double glass windows or sides—and after an experience of many years I am persuaded that

in no way can protection against extremes of cold be so conveniently and cheaply secured — If in winter saw dust or some good non conductor be placed between the outside cover and the glass sides of the hive — and by the use of my compound bars the combs be not attached to the sides or top of the hive no amount of cold will seriously annoy a good swarm of bees — It will be economy in the long run to pay the price necessary to construct well protected hives — a poor hive would be an expensive article if it cost nothing — It will be seen that by the use of my Box-bottom board — double glass sides and covered way — compound bars and outside cover a very extraordinary amount of protection is afforded to the bees against extremes of cold and sudden changes of temperature — and this without making the hive clumsy, heavy or very expensive — and without saw-dust — I should advise however to put saw-dust in the top of the tumbler board — and in the bottom box — If a circle of cheap cotton cloth be put round the hive in winter reaching a few inches above the top this may be filled with saw-dust chaff, cotton, &c &c so as to give a greater amount of protection against cold — In this way if the sides of the hive were double glass — the bees will never seriously suffer from the cold — and even if they were wood the saw-dust with the outside cover would give them extra-ordinary protection —

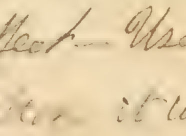
Winter Protection; The Polish hives are placed upon the ground — which is made very hard — and then covered with clean dry sand — I believe that bees when not exposed to a very great degree either of cold or heat — seem to need but little air — If they are in thin hives they must have abundance of air in the summer or else they will be greatly distressed by the internal heat — If they are kept too close in such hives in winter the comb will mould and the bees suffer from disease — But suppose that they are kept thoroughly protected — is not ventilation over and above what they produce themselves quite unnecessary? In trees they generally have such protection — and often & generally their entrances are very small — In winter fill in between first with a little sand to stop all crevices between cover and hive — then fill with dry leaves — the space between the cover and hive should be greatest front and rear where the bees will suffer most — In these well packed they will keep in the center — (April 24th 1852) Fill in with cotton waste — or wool waste or flax —

Punishment Future; Men are not sincere in laugh at & fear of. They laugh to banish their fears. (Withington pian Radicalism P. 147–9)

Protection. Let the hives have boards put against their legs – and then pile around in a slanting direction with earth –

Protection for early breeding – Hives double and painted white while warm in winter and cool in Summer do not sufficiently feel the force of the early sun – for this reason they disappoint in early breeding and swarming – My plan keeps hives in sun – admits of corn bags taken off in pleasant days – paper on ends prevents sun from melting combs – panes present on front and rear – hives admirably warmed up – then shut up when there is heat in them – nothing equals sun heat in developing insect life – thin hives are warmed up by day – but suffer in cool nights –

Surplus Honey Receptacles we have no trouble at all in getting bees to enter side boxes – Allowing for March 9th. 1868 – See Pe "Improvement" I am persuaded that I have brought the arrangements for surplus honey in boxes to a completeness very admirable – Of course the same arrangement will answer for boxes holding two or more combs – Front lid of receptacle box should have two cleats for handles



and is used to cover holes in sides of hive when side receptacles not in use –
Loose nails in ledges should project their heads about 1/4" above level to be easily taken out and to keep upper section of hive so high above the ledges as not to crush a bee –
10th. Observations with stove pipes and hot air furnace pipes show how slowly heated air inclined to rise or pass in horizontal pipes – a very slight ascent in such pipes has great effect – Use this idea perhaps in side arrangement thus – but after all so little heat down at bottom it would hardly pay – A much more reliable way would be to confine heat in boxes – thus make bottom of side receptacle 3/4" thick – lay some [illegible] [illegible] on bottom – or saw dust – set over this a [illegible] 1/4" board ~~thin~~ to rest boxes on – no doubt holes 2/3rds up [illegible] or near the top in the [illegible] of small boxes – [illegible] this here [illegible] [illegible] greatly in keeping the warmth near to all – In boxes on top outside holes will be covered with a small piece of glass stuck on – Bees thus intercommunicate in all the boxes – through sides – If holes used make bottom of side receptacles 7/8" – shallow chamber 1/4" – no doubt the holes would help the shallow chamber and a nice answer – a warm current of air would tend to set up [illegible] under shallow chamber – This will be much increased by setting boxes on front – bees having the two [illegible] [illegible] See Pe

Position — The position of the hive is a matter of much importance
A windy situation bad — the hives ought to be in a dry situation — I prefer to have them on an elevated platform or mound of earth — ~~higher [illegible]~~ than front — this will give them an elevation and enable the Apiarian to examine them more readily — let the mound be about one foot higher and with clean sand or gravel — a little broader than the platform of the hives — slanted all around and covered over the slant with turf — this will make a very neat and beautiful appearance — in the winter put pine brush or something of the kind around to keep out cold — the elevation will tend to keep all dry — there will be no difficulty in mowing the grass — let mignonette lemon thyme — or something beautiful be planted on the borders of the mound and it will aid the bees some — but more especially will be very ornamental —

April 2. 1852 On my new plan let these plants be put on the slope

Some recommend W — or S. W — as the direction they should face — if they come out too early in the day — do not do as much [illegible] —

Surplus Honey Receptacles
March 13th — 1868

Easy to provide for additional external surplus honey receptacles — thus if a back ventilator — and hang behind hive a large box for surplus with bottom side opening same size as ventilator so that bees can reach it on the — [illegible] with bottom board of hive! — If hive has pitch from rear to front heated air odor &c will rise freely into this box — Mr S. Brown informs me that Dr ~~[illegible]~~ Dillard of Kentucky used a box of same [illegible] in the rear — A quite large box might be used holding 30 or more lbs — It might be arranged for small frames or boxes for [illegible] — having upper hollow chamber and movable cover over the It might have one side movable to cut out combs — Let it be deep — outside measure 9 X 15 3/4 X 18 bottom 7/8" — top 7/8 ~~sides~~ 7/8 back 7/8 side next to hive 1/2" thick this will give a capacity of about 30 lbs = then a box [illegible] on rear — top [illegible] end movable — and be thus in excellent shape for market — to be sold per box [illegible] comb — This back arrangement may be appended to side arrangement — or used instead as it requires no cutting into sides of hive — To induce the bees to occupy this rear box more readily it may have guide comb — but better still may be first set over main hive as a super and when work well begun bottom board on and box and are set in the rear — have an inch slot set ~~in which~~ equally dividing opening into box — to prevent bees from carrying combs into ventilator when ready to send to market fill in with strips — ~~A screen [illegible] may be used instead of slats or a plain~~ The use of such a [illegible] detached collateral for honey or [illegible] clean, palatable — Of course [illegible] boxes might be used over a [illegible] containing much better than four sides — see Over 329

Queen Cage — July 2d 1869 — See Qu (26) —

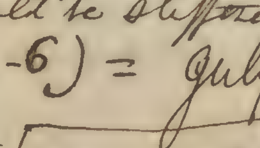
Q u (1)

Queen Bee. Her proper title Mother Bee. Ridiculous notions of Monarchical writers. Vignette in "Cotton's My Bee Book." Queen Bee surrounded by bees in an attitude of homage. "God save the Queen and all the royal family."

Motions of — When taken from the bees and usually in the hive — very slow — but she has also a very rapid, arrow-like motion. This the reason why she is so seldom seen in swarming time — Usually darts at once into the hive — Use to be made of this fact — by shutting down the hive as soon as a few have entered, she will generally be separated from her colony — and they will return to the home they have left. (false

Query — Is not the common idea that more than one Queen will in "no case" live together in the same hive? Rev. Theophilus Packard D.D. of Shelburne Mass — related to me the following — a woman of nearly a member of his church — was once left at home to watch the Bees on Sunday — A swarm came out and settled — a second came forth and united with it — a third — a fourth — and a fifth. When the men returned from church they hived them altogether in one large box. In the Fall they were smothered — and it was found that four of the swarms had worked in the corners and one in the center. a marked division was preserved between

Surplus Honey Receptacles Continued } If boxes of same size with those on top are used —
March 12th, 1868 (See (2)) } then have receiving box to hold 12 — two rows of six
each — Set up hive on a pretty decided slant so as to cause heated air to rise most
readily to back tier of boxes — It will help, to make interconnecting holes between uprights
of boxes — and to have of course intercommunicating hollow shelter under all boxes — Set the
boxes be well protected on top and on their sides by some wool — We now get storage for 30 lbs —
For reasons previously given bees will probably store as much in these small boxes as in a
large one — If by having work begun on both, they will work as well in these collaterals, they
dislike cutting into sides of hive — Hive may be set so that these back collaterals will be pretty well
protected by cover of hive against sun — Set hives for summer — facing — S. W. — so that the P. M.
sun will trouble the collaterals least — I should prefer having the ends of receiving box or one
movable — to use glass — push with wool be — It may be necessary to set a slat 1" wide on
the ventilator as well as receiving box — to prevent bees from building comb there — It will be
seen that the combs in main hive and boxes all now run from front to rear of hive
and have the same slant — so that no confusion is caused to the bees by removing boxes
partially filled to back collateral — I estimate that the ten frame hives with
27 small boxes will give a storage capacity of say 67 lbs and the 18 frame
hives with 32 boxes of 30 lbs — With the system of removing filled boxes and
replacing with empty ones there would be no need at all of a double story
tier of boxes — nor in many cases of the rear collaterals — In removing full
boxes above or from the rear — always aim to have empty ones as nearly central as
possible — to be sooner filled — and to get next set to remove as near outside as
possible to save time in removing — Make only one communicating hole in small boxes — one
of the three upper tiers will not intercommunicate with the others above — If surplus is taken in small
boxes in the rear — glass will show at each end — In adjusting back receiver I should use
a little melted wax to connect closely bottom, [illegible]
[illegible]
Set back boxes up at least ½ when they rest against [illegible] a single strip for back of out side
row only 1½" — April 1st J. F. L. suggests that the [illegible] strips which will be needed
for supporting boxes on frames should be supported by two strips under them between combs
resting on bottom board — (See 2 W — 6) = July 5th — Do not like two inch holes in the
bottoms — nor intercommunicating holes —



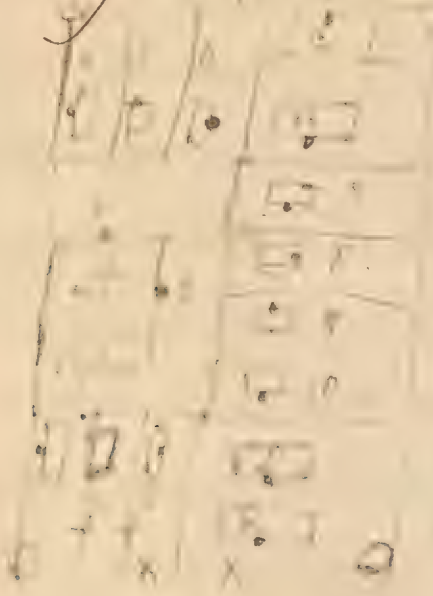
Let 1/2" inch holes be bored in [illegible]
one inch from uprights — when the bottoms are sawed out with saw or
cutting gauge cut out slit — as shown by dotted lines — This gives more communicating space and
yet will not tempt bees to carry combs down upon the tops of frames — If half size boxes are
used these may have the two inch holes in top — and the 1/2 slot in bottoms — 8th — Evident that
bees prefer to begin comb building low down — and that even left to themselves they tend to build one
comb in box — ~~How it is it comes to~~ Let small boxes be only 1 5/8" instead of 1 6/8" =
July 15th = Are not the boxes too high — and the half boxes too low — Compromise

2 w-3) Make the boxes to receive glass 6 X 4 1/2 - and have only one size - Lower boxes to have 1/2" X 4" slot on bottom - on top two inch holes - Upper to have 1/2" X 4" - Each box will then hold just about 2 lbs - and the two sets over 70 lbs - If more room wanted - inside of main hive - the partition with their hard wood edge might be kept far enough from front or rear or both to give room for boxes! I still do not believe that such room will be needed - if single boxes are used which can be so easily removed as soon as filled - Room enough given under all except very extraordinary circumstances for all that any non-swarming stock can do at one time = It is probably better to use the box outside arrangement - the other arrangement makes the hive too unwieldy -

Guide Frames - Patterns - better name - these without pieces of comb were abandoned with Italians - (See A. B. J. Vol. p) I have now June 11th 1881 reason to believe that what I said of them then was quite correct - June 10th made a swarm gave two central full combs between guides - rest frames with strips of foundation - full length nearly - some inch deep some two - (13th) Found bees had accepted them without swarming out - and were busily extending them - took out central two combs and gave Dunham fdn - full size - found the weight of the bees mainly on the patterns! Did not fear to give a full set of complete Dunham fdn with patterns - 16th made a swarm - A.M. gave fdn (not Dunham) the old fashion in three strips - P.M. - bees working out few between patterns - put between patterns centrally two D. fdn full size - much worked on by bees of each - the fine appearance of D. fdn much handsomer than the work on the other kind - which looked very rough in comparison - If at last these patterns answer and enable us to get all worker perfect comb without any wires - what a triumph! (Having suffered intense from every chance contact with the bee poison - for many years & especially so this season, I have about come to the conclusion that my experience has been the same with that of an old tobacco user who after a few years abstinence attempts use at once to resume in full [illegible] [illegible]

(over)

(2 w-4)



[illegible]

[illegible] platform [illegible] — or a light cream color [illegible]

[illegible] — edge of platform has the [illegible] boards to keep it [illegible]

to prevent [illegible] from getting over boards — they may be chilled

[illegible] locked down with both straps — or [illegible]

[illegible] to have queen gate 5/32 — to be opened at [illegible]

[illegible] and driving out to ~~be fed~~ motion — and [illegible]

[illegible] flat water will [illegible]

(Jan 24-'37 I sold all my bees in — and had nothing to do with bees until the Spring of 1865 — when I found that the mere smell of the poison affected me very seriously — any contact with persons handling bees, even the reading of letters or postal cards from them produced a fresh attack — I did all that I could to avoid all contact with the bee-poison — but found it to be next to impossible to avoid it very effectually — this season I have had dreadful head aches over and over again, and even the fumes of freshly extracted honey in the house has brought them on — last week after very serious consideration I resolved to try as a means the effect of handling bees and taking no pains to avoid being stung — wearing no bee hat and I have done this now for over five days — and have had less and less suffering all the time — with stings more or less every day — What a blessed relief it would be to find that my system can in a short time accommodate itself to the poison as it once did! that I can resume my experiments — and visit my friends who have large apiaries with my former impunity!) June 20th [illegible]

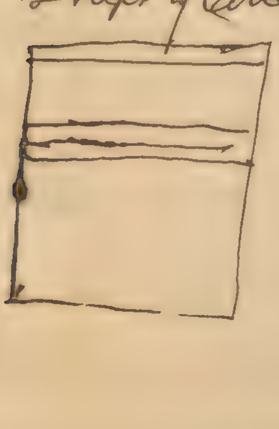
[illegible] comb with Italian bees — [illegible]

The weight of the bees being taken off from the [illegible] and resting mainly on the [illegible]

[illegible]

(2 w, 5)

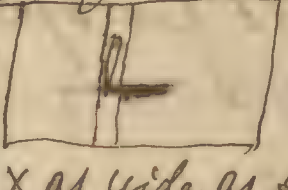
(Dew-6) Shallow Chamber at Hive—April 9th—1868—I have this day devised a plan for having or not having—at will the shallow chamber—which appears to me to be very promising—Let sides of hive be rebated say down depth of shallow chamber and in 1/2—5/16 X 8/16 Let back of hive come up only to level of this rebate—Make honey-board to shove or be set in so as to rest upon tops of frames when no shallow chamber wanted—Have clamps of honey board above it level enough to form shallow chamber when turned bottom side up—projecting parts of clamps down—When no shallow chamber—piece of cotton cloth laid between frames and honey board—prevents bees from gluing frames to honey-board—easy to pull off this from frames—old pants or thin strips of old woolen rags sewed together w'd answer—Make also middle strip of honey-board to screw to clamps so as to be detached at will—to get opening for small central brood shallow chamber—Shallow chamber might be got perhaps better—by laying 5/16th strips on the rebates on sides—and same strip on back side of hive—having no projecting clamps—have heads of nails to keep honey-board from crowding too close to part of hive—crushing bees—The honey board c'd now be taken off and put on beautifully—To stiffen frames to allow great weight of honey boxes and not sparing the frames—lay on the frames 1/4" hard wood strips—ends resting on rebates of sides & boxes resting on these strips—~~If these~~ Let these be 7/8" X 1/4"—or 7/8" X 5/16": These same would answer for strips to get shallow chamber! i.e. the 18 7/8 X 18 7/8 = If any fear (I have none of sagging, frames two central strips might be 7/8" X 1/2 rebated down so as to leave the 1/2" only 1/4" wide in middle—These strips w'd not be so firmly glued but that in hot weather (honey harvest) they c'd be easily removed—If needed strips of cotton cloth c'd lay between them and tops of frames—middle strips might be 1 1/4 wide and outside ones 1/2: 1 1/4 X 2) + 1/2 X 2 = 28/8 : 7/8" X 4 = 28/8 :



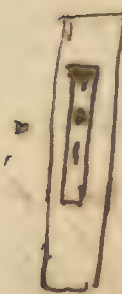
2w(7)

To be (8) - Frames or Bars - Improvement on - April 16th 1868 =

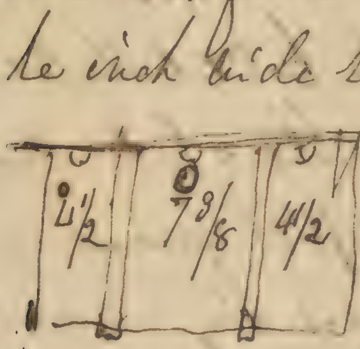
To stiffen frames without corner pieces - To make ~~bees~~ build combs straighter in frames or bars long from front to rear - To give good simple winter passages in frames or bars -



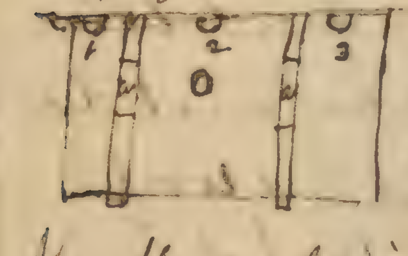
Get inch poplar or linden boards - any wood that will bear to be sawed thin and will nail well -



Cut into pieces 1/2 X as wide as saw will cut 1/4 inch slit (1) - length of pieces just enough to nail into ~~top~~ edge of top piece of frame - and nail into ~~bottom~~ edge of bottom piece - and project 1/8th below so as to form a step to let bees mount easy to combs without building wax ladders - Cut when slit is made into strips say 1/16th - or 3/32nds thick - just thick enough to nail properly with fine brads - Into each frame nail centrally two of these strips - (let bottom and sides of frame be inch wide same as top for this purpose) It may prove better to use four strips - these

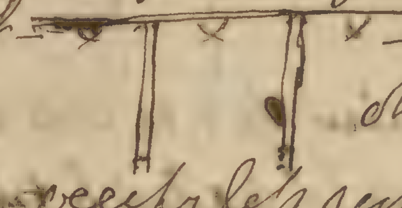


and divide equally or - 7 3/8 centrally and 4 1/2 on sides - Thus leaving no wood in direction where cluster of bees would be to and spread begin to build - Now if small hole for passage made in center part impossible for bees ever to miss connecting - and frame exceedingly stiff - With latter arrangement frames would not cost more than with corner pieces - ~~probably not~~ if as much - Also use any triangular guides - and S.S.S. wax foundations - or the latter without any triangular strips - & one guide in each division - If triangular guides dispensed with can make top piece of frame 1/4 thick - save expense - and yet have very stiff frame - ~~So far so good~~ - Bottom of frame if needed might be 3/16th thick -



Bees must begin to build at 2 - and if strong enough at 1, and 3 - ~~They~~ thin strips will prevent them from going crooked as in my first patent with solid middle strip - as they approach the thin strips they must aim to carry their combs through them to meet the other combs - If they do this entirely then the combs will be shallow ~~between the strips~~ so as to allow of bees to pass between them and thin strips - ~~with any way as it was~~ If the winter passages are - are obstructed easy to cut out through slots an opening when center hole is made - Would not frame be so stiff as not to be sprung by weight of honey box? If so might not strips project above top of frame so as to ~~serve~~ be rests for small boxes - or if not thought best - small boxes might now have small cleats for feet - to make shallow chamber.

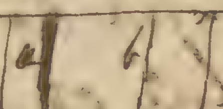
2 w (9) – Of course this arrangement applicable to slats and would obviate the greatest objection to slats – Could use long ones safely – could set them down like frames – Could easily empty them in [illegible]! – The bottoms when slats were used might be kept from springing apart by fine annealed wire – when filled with comb all right –



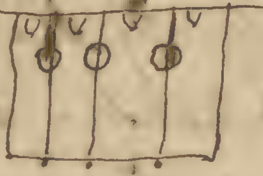
– Now if for any reason slats preferred may be used – It is obvious that they would be cheaper than frames and would occupy less room – would also prevent so much escape of heat above and enable bees to cluster back up against front or rear of hive ~~some~~ as they naturally do in any cavity – also to pass more freely from comb to comb – as combs would not be attached their whole length – Supposing say two frames in each hive on the outside – (4 in all) easy to remove them so as from above to get at slats to cut the connections – We should then have a compromise between the slats and frames – and I should not be at all surprised if it proved a better arrangement all things considered than the frames – Of course this whole style of frame or slat patentable – and if it works as well in practice as it would seem theoretically that it must – the patent would be very valuable – Slats on this plan got up by any one else would prove (so it now seems to me) formidable competitors with my frames and might even in the long run triumph over them – being so much cheaper too The whole of this plan has been the result of intermittent thought to day – and I shall at once try both the slats and frames – and await with the deepest interest the result – The slats not only cheaper but dispensing with thick uprights and bottom piece will make so much less wooden surface as to be an important consideration in cold climates – Not over 1/3 as much wooden surface for slats as frames – (17th) If top of frame made 3/8" thick – ~~to~~ make frames fit the old style – rabbet ends of frame or slat 1/8" or 1/16 or 3/32" down and so as to clear well front and rear of hive – We now have no need of slopes in front and rear of uprights of frame! and no more work ~~[illegible]~~ to rabbet than to cut off triangular guide at the ends – In making the thin pieces to the bottoms

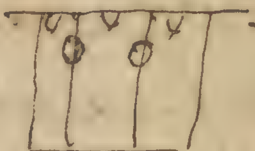
2 u(19) —

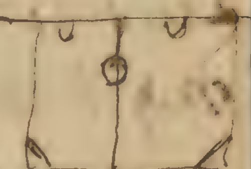
let slips be used on two alternate sides so as to dispense with staples on sides of uprights! unless it is found there is danger in manipulating of these staples raking the faces of the combs — (21st) Will not the thin strips interfere greatly with manipulation of frames? Only 1/4" width left between their opposite faces — too little for safe manipulation — If notches cut in both end bottom rail this trouble might be obviated — this might easily and cheaply be done by laying many strips together before nailing — In this case it would be necessary to — How would it answer to have two strips instead of four — one on each side.



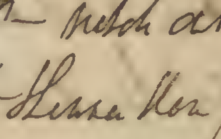
a — say facing on near side — and b — on opposite side thus — working like the nails? L. W. [illegible] Could these be put opposite to a and b — so notches then required — Or instead of thin strips annealed wire not too fine might be used — I am on the right track but need to test the thing by the bees (2 hours later)



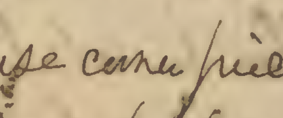


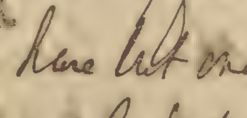


In bottom or top of frame drive tacks not down tight — around it twist strong annealed wire moderately thick — bringing it around upper rail stiff and back again to nail head, to be fastened — Ends between wire spread a little apart can be used in any corn cob winter passage — Corner block may be needed to stiffen guide [illegible] dispensing with the [illegible] L. W. G. be used — This seems to me [illegible] [illegible] objection. Be having sent off for staple put in one to show how it can be done — 22d — Make top rail of same 1" bottom — 7/8" — notch at top 1/16" to receive the strips — use corner pieces — have but one strip — make it thinner than 1/16" — ~~easy~~ to and only 3/16" wide — easy to spring cob winter passage into place —



use triangular guides or not — L. W. G. —





— Use two or four

The idea now is to have combs edged on to these strips — to have them so thin and narrow as not to be objectionable in the center — If slot is cut in thin strips ~~then~~ cob put with its hole to correspond and is cut so as to be sprung in between thin strips and held in position till bees have finished combs — no matter what the diameter of corn cobs the lengths being uniform and true they will always

See 2 u(14)

2 w (11) — To ship or mail bees — April 16th 1868 —
Examined to day a sponge box with candy — wet sponge piece of comb and about a
dozen bees — they have been confined more than a week — carried about in
pocket — tossed like ball in air bee — just given out — only one alive — candy
well gnawed — water gone — sponge dry — just as I supposed to keep water
for them to dissolve candy the difficult thing — My mind to day being in
the inventive mood — at once on seeing them — thought of confining water
in cells of old comb — dipping them in melted wax to get a thin
air and water tight covering on them! Then of using my thin pieces
for wax comb foundations ~~applying~~ like a plaster — sticking on — Tried this
last successfully — but with stick dipped in melted wax fastened air
tight the wax all around edges! — made a few holes in it — to let bees
see what it contained — If thin honey or syrup used — put in old comb —
might dispense with candy — or use both — Evident that the same
arrangement secures water for shipping bees — impregnating queens — this
will enable us to get bees from any part of known world — Easy to make
wax in shape of frames — if you please about as thick as comb — It can
have holes made in it while soft on each side — larger than drone cells in
diameter — Fill one side with good honey or sugar syrup not too thin —
but thin wax foundation plate be warmed — ~~have~~ or have brush with
melted wax rubbed over it — so that it will stick like warm plaster —
do the same to the other side — Make a few open holes to let bees know — These
may be used and no comb at all! — Make all tight around edges with
melted wax — make wax cakes to be firm in frames by melted wax —
Use then only old combs that cannot melt for bees to cluster in —
Great idea something honey tight to hold water or liquid food — covered with
thin wax to be gnawed open by bees! Solid wood frame ~~might~~ might be used — sides
coated with varnish, wax &c — (17th) Use mould to get holes larger than drone cells
on both sides of wax cakes made to fit frame — holes need not be too close

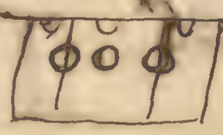
2 w (12) together — Before applying plaster like wax covering hold wax cakes for hand in frames before fire so as to soften the surface enough to to make the thin plaster adhere quite firmly to the surface of cakes — then fasten all around edges — Can now get bees from any part of the Apiary — and if any one can be found to put in a properly prepared box a queen and the desired number of workers — As the box can be sent all complete to receive the bees — It would be well to select bees just fully grown — and some just hatched — as they would not be so uneasy when confined — not being disposed to fly out and knowing nothing about it — It may be well to patent this thing here and in Europe — 19th — Put up bees in small box with candy and sealed water — 21st — Bees very lively — To get in bees to best advantage shake them in water basin — then select bees of the right age — mostly such as have not flown out of hive — James suggest to shake before hive and selecting to put in water —

May 26th 1869 — Easy to fasten old piece of drone comb in a slot — as they fasten sponge — or if sponge used soak the lower part of box holding sponge so that ~~it~~ water will be saturated then sponge to retain water much longer — Sponge best if it will work —

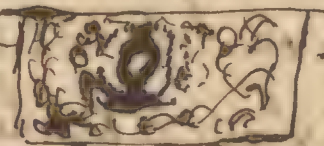
2u(13)

See 2 in 10,

2 w (14) This is what I have been aiming at for years— I am now some in doubt whether to have two sets of thin strips and two cobs or only one— but inclined to two

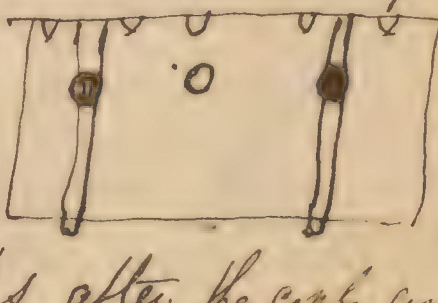


— Evident that same arrangement applies to slats— Easy to set in com cob centrally by cutting a hole for it— cut the hole large so that bees can pass around it and with soft wax hold it in place till bees fasten all tight! this directs all operations— and the hole in the cob being small no trouble in filling up as in showing—



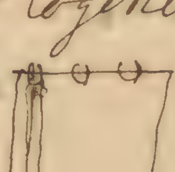
— shaded lines above and below cob represent pieces of soft wax to hold cob fast in hole till bees build up to it— These cobs must be cut to lengths with a circular saw— and the pith bored out the whole length in the same way— thousands thus prepared at a trifling expense— Claim in Patent— To make winter passages— strengthen combs— stiffen frames— Cob as material— thin slotted strips as the way— Where shoulder is used to let in strips on upper part of frame helps to stiffen and no need of corner pieces— where L. W. G. used no need of triangular guides— (2nd) To get in cob passage after comb is built cut out a square hole— thus—

—This directs all operations— From looking at the comb building in one of the new style of frame— I prefer to use five L. W. G— The two in center space on each side of middle one put nearer to the thin strips— thin strips— 1/2 X 1/16" with 1/4" slot—



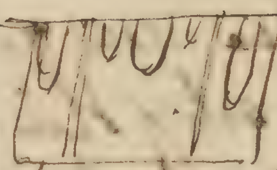
My son J. T. L. suggests to remove these strips after the combs are completed— If they are to be removed— make them with notches

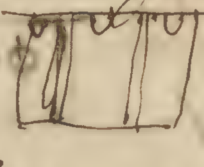
such as those used for fastening in combs— and use small rubber bands or strings which can be cut to hold together— no hole in them needed for center passage— Instead of cobs, take board—

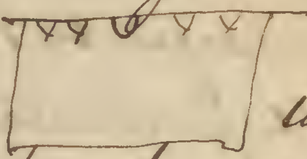


bore through at proper intervals with 3/8" bit— (by power?) Slit into sections take out in then crosscut into center passages—

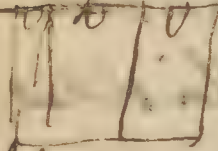
— To confine these comb by bees spring them between thin strips— Might be touched with melted wax— but hardly needed— Much easier to make these than of cob— By removing the upright thin strips— more comb surface gained and the section of wood removed— From a careful examination of worker cells [illegible] in one of these frames they seem to work as true as though they were x in (15) centering in three small frames – It has now the appearance of being just the thing needed to get straight combs in long frames – and good winter passages – (25th). Have only three L. W. G. frames – make space each for bees in joining edges – If thin strips are not used should prefer fine starters – To confine the comb is built the thin strips – touch ends. where they lay on top and bottom of frames with melted wax – top of frame being 1" and bottom 7/8" – cut winter passages so that it will stick at about the proper height – We have now the simple thing "Simplicitas sigillum veritatis" –







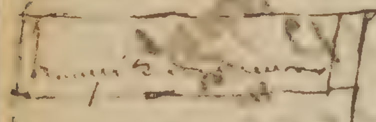
(May 18th 1869) – Why not make strips just to spring in and hold these wax guides – strips to be removed as soon as the combs are built down enough – might be cut out of tin –



Hive for cold winter regions—

Qu(16)— May 15 1869— South of Ohio River and Potomac present form of hive probably best— Taller hive—say 15 inches high—it may be better further South— Would make such a hive to receive surplus honey boxes on the sides—

(19th) Plan of hive for cold winters— From front to rear say 12" in the clear—depth say 15 inches in the clear—from side to side say 14 or 18 inches for frames—10 or 13— and two inches more for movable inner sides— corner posts to nail hard wood frame supporters to— and front passage further as in glass hive—and rear passage for [illegible] ventilation—Inside front and rear walls of hive below comb supporters movable—outside of these front and rear hard wood supporters one inch deep high to an edge on top for honey boards— Between outside and inside front and rear walls of hive room enough for boxes— For wintering—use say 8 or 9 frames—moving the inner sides so as nearer to the center—and fill air space between, with dry chaff, for non-conduction of heat—also fill front and rear air of these with same—top of hive winter chamber for bees (about 12" square covered with woollen mat &c be so as to retain heat and not prevent escape of moisture—As colony increases in Spring move inner sides so as to give room for more frames—may be taken out altogether For great surplus honey—remove front and rear movable walls and set honey boxes to 2/3 of upright of frames—having [illegible] them— If few combs are kept in the main hive—by using two tiers of boxes may also be used on one side—make upper top story just high enough to receive a set of boxes (being hand taken off) 1/2 the height of lower side boxes— It will be seen that this is a combination of glass hive and 1868 style of hive—retain warmth in winter and cool in summer frames admirably, 2 w (17) easy to handle — strips admirable for cutting bees — and [illegible] this braces just where easiest filled — and any desirable [illegible] of them as many as possible used as season and [illegible] [illegible] — When front and rear [illegible] in place a movable strip [illegible] in the left [illegible] the [illegible] so that they cannot get [illegible] top of hive above [illegible] side of the boxes — It seems to me that we thus secure a strong simple hive — If desired one or both of inner sides may be kept in to be removed and get room to take out first comb — Make these inner sides with [illegible] and to move as frames on hard wood frame supporters kept up to an edge on top for honey board — [illegible] on sides in place of old [illegible] holes movable [illegible] — kept about 3/8" from [illegible] board — strips laid against them [illegible] in bees — You have bare sides closed with all the advantages of [illegible] opening [illegible] The combs in such a hive kept straight — much easier than with long frames —

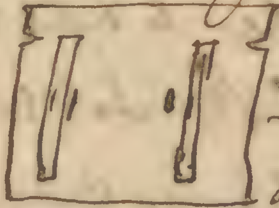


(1.1.) are hard wood frame supporters. (2.2) are hard wood honey board supporters let in 1" deep into posts (20") — Let movable dividers be hung like frames — kept at some distance from walls of hive — For winter may have [illegible] carpet [illegible] under [illegible] with [illegible] — Front and rear movable inside walls may be (when they are [illegible] to the [illegible]) [illegible] [illegible] most and be shored up close against the frames — this accomplishes [illegible] [illegible] desired — gives bees a place to [illegible] up to — If slots are cut in the thickness of the uprights say 1/4" by 1" by 2 or 3" bees will be able to pass from comb to comb without winter passages — or an inch or two of the [illegible] may be so arranged that the bees can travel in a [illegible] slot

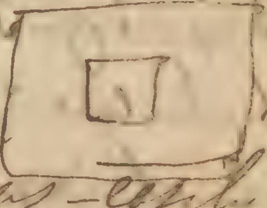
— This be [illegible] [illegible] with [illegible] above — I love the [illegible] walls! In spring when [illegible] [illegible] [illegible] the front and rear walls — Better to cut slots out of [illegible] [illegible] 2" of top and bottom of upright so as to leave a little [illegible]

cut out with a circular saw —

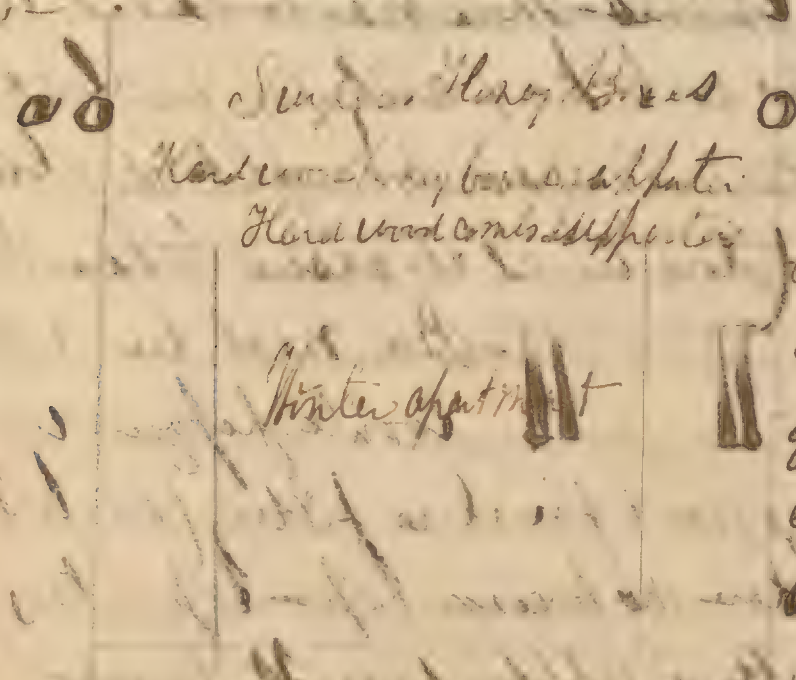
4th) = Use frames covered with old woolen cloth with woolen rags or wool where combs would be instead of dividers = warmer — cheaper — Set muslin inside front end or walls be suspended on rabbet strips nailed against sides of hive — or rather be notched made to run in rabbet strips —



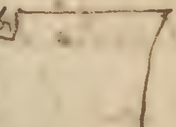
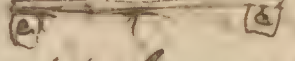
bevelled from opposite sides like muslin doors of piling hives — kept 3/8 from bottom to be closed by a muslin strip — may be kept away 1/2" below honey woods frame supporters and closed also with strip — Set woolen cushions be put on with leathered carpet tacks — cushions to be removed when weather warm — put close to uprights for winter moved out when frames to be examined. Make upper mat = or cushion of old woolen garments filled in with coarse wool — and quilted = If thought desirable might have a small muslin center to give candy liquid feed be without removing mat.

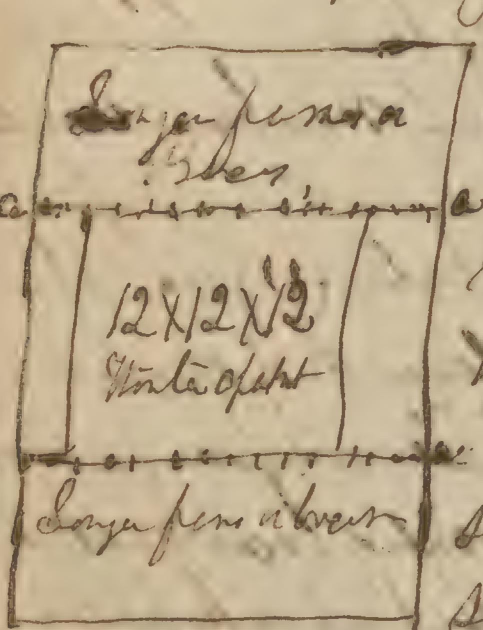


this to crowd into these woolen mats or pillows — cushions — candy put on, taken off and stored in large boxes near box — ~~be~~ only about one foot square — Now you have surfaces against which moisture ~~would~~ not condense — through which if left it would escape — [illegible] animal heat more than from human bodies in woolen beds (1) uses the cloths to prevent warping as to answer as handles — Interior dimensions of ice chamber 15 × 18 × 12 = 15" deep — 18" from side to side ~~front to rear~~ — 12" from front to rear —

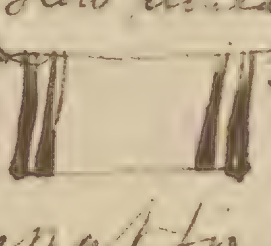


To get view of glass ends of boxes make small holes 1/2 — shut up with plug or wool — this gives a view from end to end of hive of small boxes when only of outside ones sealed time to remove — By opening one of these any bees which have escaped from hive chamber may get out — Might not these holes enable us to dispense with any honey boards — but get such a one would be useful —

(22nd) It will be best to make top section high enough to receive one set of boxes on (2 top of hive of same height as those below — so trouble in getting getting three tiers of 7 boxes each — 21 — below 20 boxes — if some of boxes 2.50 instead of 2.75" wide — can get 24 boxes below — Better to have all boxes uniform make the hive 19. from side to side — to hold 14 frames or 13 with one divider — Can get 24 boxes below (24th). Let corner posts be notched at these  so that hard wood about supporters may be nailed at (a) — and the honey board supporters be put in the notches — marked —  — (a.a) are blocks nailed to them to fill in the notches — make these supporters of 1/2" pine bevelled up to a sharp edge — make middle part and rear of 7/8" stuff = See Journal June 9th — 1869 — (12th) The hive of the future. To get honey in boxes or by emptying — To get more depth for wintering in cold climates — and yet to be able to use economically and advantageously any size of frame already used in apiary — To get better winter protection — &c &c.



Dotted lines a,a, a.a. may be the then slotted arrangement used in my wide top frames — by two narrow strips laid on cover of these way one each way — with the projecting ends on them height of front and rear apartments and cleated to allow may be diminished so as to receive the old style of shallower frames — not used when boxes are to be put in — Easy to arrange so as to get these strips out all except top ones — these may be raised up say one inch higher so as to keep only top for clearing.

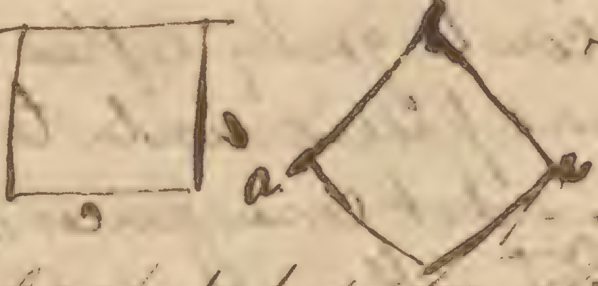
To winter bees in as with ... on tops of old ... arrangement be put up close to bees — have ... of frames slotted — (How would it answer to have them ... say 1/4" wide nailed with fine nails  — Bees must live up against wood — and have admirable winter passage — would not seem to be stiffer — Claim such an arrangement for dove-tailing (or ...) frames as well as present style. Better have no boxes on top — top storey then only say 3" high — Top boxes got by getting all boxes ... by ... top frames as in my old hives.

2 (20))

June 14th = The lower slatted front and rear partition might be nailed together so as to be each one piece — held in place by a shoulder strip between them and corner pieces — the upper strip (hard wood) let down into a groove in sides of hive — so arranged as to be easily raised up higher for winter — This gives all the room needed — Give about room for five frames in front and rear apartments —

15th = Let grooves in sides of hive be just deep enough to let hard wood strips down to proper places — Let them have holes so that with a hook they can be gently lifted up say an inch — and small nail or piece of wire placed under to keep them up to proper height in winter.* — Let corner pieces not come out so as to touch these strips — say 1/2 of a space from them — front and rear movable slatted partitions may rest on small side strips — small strips let down between them and corner pieces to hold partition in place — Have no back ventilators — slatted passage under frames enables us to dispense with it — Have entrance cover (the back one) in which boxes rest movable — as in glass hive for examination — both may have holes letting bees into boxes also as well as ~~front and rear side~~ holes in boxes admitting bees front and rear — Front entrance in winter should have wire arranged to keep out mice — (I jot down here just as the thing unfolds — much as I would talk it out —) Let corner blocks go down to floor of hive — have shoulders as high as hard wood frame supporters — so that these when in their grooves rest against these shoulders and are thus made very much stiffer — Space below shoulders the place for movable slatted partitions which need not be slatted — should be only 1/4 or 3/8" thick with 1/2" clamping pieces on their outsides to serve as handles — these fit in spaces in corner blocks under the shoulders — may be kept in place by wedges or buttons — Would there be any need of these slatted partitions for the expert? The shoulders of the frames may be say 1/2 or 5/8" and the combs in the front and rear apartments would then come so close to the uprights in the center apartment that the bees would not build ~~between~~ them and combs — Boxes now would set up close against uprights — Winter cushions

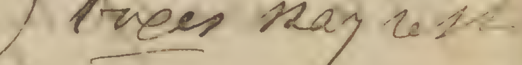
wool or woolen rags might be on patterns — Or perhaps better slats —
Let corner pieces be kept down so low that tops of frames ~~[illegible]~~
in this side apartments would come say 1/4" below projecting shoulders
of frames in central apartment so that the frames in central ones
could be slid under projecting shoulders which then may be kept of the
exact and convenient size — The side frames might be chipped low enough to
get with proper thickness of floor board under them the right height —
These 12×12 frames not so convenient to handle or to remove — but may be
handled so as to be kept right — corners to be grasped
in the fingers — eyes and hands then all right



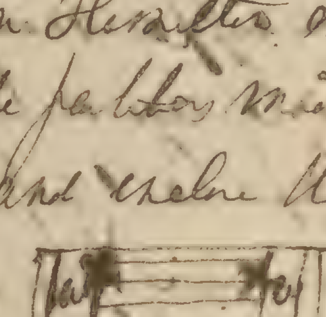
16th — If desired to get frames in side apartments of same size as in main
hive — easily effected by keeping corner posts on which they rest higher up —
Let entrance space be 7/8" deep — thickness of its covering board 7/8 — this with the
arrangement to get combs in side apartments to come close up to uprights
gives us the 2" we need to make height right for our frames & depth of hive —
Use in practice a long strip 7/8" thick with shoulders that

— when
desired to give less fresh air in warm weather ~~more room~~ and air ~~remove~~ this
strip — set this strip on its largest shoulders 7/8" — When desired to keep mice
out ~~set it~~ reverse it so that entrance is only 1/4" high — When in winter or
spring wish to clean out hive — remove it and the frames being say 7/8" higher
than in summer arrangement very easily done.

July 1st — If we wish to use same size frames front and rear, the corner pieces
should be kept up high enough to keep these frames the level of the central
frames — The uprights of the frames may be hollowed out by being shifted
upon a circular saw — If the frames in the ~~central apartment~~ front and rear
apartments are kept say 1/8 of an inch from their uprights the bees would
cluster against these ~~[illegible]~~ easily ~~[illegible]~~ pass from end to
comb through the slots in the uprights —

2 w (22) July 19th - 1869) To get frames front and rear the same dimensions
with those in centre of hive — Have corner posts
which support them to have a hard firm sharp edge — to raise
frames say 1/2" 3/4" above the level of the central frames — have no
bottom strips under front and rear :— Or better — Let central frames
be say 3/4" above bottom board — or even one inch — and frames in front
and rear only 1/2" above bottom board — or central 1 1/8 — others 1/2 — now
the tops of ~~central~~ side frames above the projecting ends of central
ones so as not to interfere — and they may be slid up as close
to central ones as needed — or by lifting one out — slid away to give
room for raising central frames there is now room enough under central
ones to sweep out dead bees in winter — [illegible] to
whether one or more are kept there in winter should be raised so as to
give sufficient room under them — Side (front and rear) boxes may rest
on strips say 1" thick with slid 3/4 cut under them 
and on pieces nailed under them — (20th) Bottom of main central hive might
[illegible] have an upper movable bottom like that of honey-board —
In Summer this to rest on two strips say 7/8" thick — by 3/4" wide — In
winter these strips laid up so as to keep movable bottom say 1/4"
above bottom board — Now we have the space below frames for cleaning
out dead bees &c — The frames in side apartments going down to within
1/2" to bottom of hive — then enough to allow them to slide on their
thin edge within as close to the uprights of central frames as
may be desirable without at all interfering with the projecting
tops of frames — As a multitude of experiments made by me
show how greedy bees are to cluster under a comb laid
over tops of frames — if the uprights are hollow and the
combs in front and rear come close up to them so as to fill
there they never cluster — If wished to keep them here we
back here only one comb close to uprights!!! —

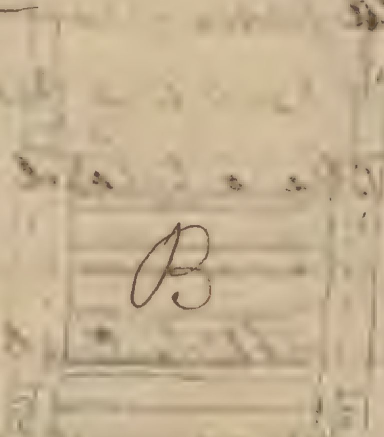
23) Let middle B.B. have 1/2" strips nailed on to 7/8 × 7/8" cleat pieces – keeping Mov. B.B. 7/8" above permanent B.B. – Let slat holes remain open all winter – do not have one air ventilation P.B.B. so that bees can pass into it and choke it – If entrance opening is now left large enough (contracted by movable strips as before desired) easy to clean off dead bees in winter from the lower space – The Mov. B.B. – may have the slats very open to let most of bees drop into lower part – of course if bees would not build comb in frames if bottom of frames were kept say one inch above P.B.B. – the Mov. B.B. might be dispensed with – Or // In P.B.B. nail 7/8 × 7/8 strips – to just come out to corner blocks – Let into these or laid on them (between heads) may be thin strips to keep bees from extending combs below bottom of frames – might be removed for wintering – If bees (by putting comb next to back tops of frames) were made to winter or lock up a cluster towards rear of hive how easy to keep corn cob ladder at rear and clean out all refuse in front! – August (14th) Being detained in Hamilton on my journey home from the East – had a hive made – had made partitions inside – very easy to put a queen-cage into front side apartment and enclose them! (19th) – Let inside of hive be 18 × 12 × 12 for centre apartment – strips (x, x) run across and lower down them ones for [illegible] to receive front and rear frames same size At corners may be boxes for surplus honey – Let hard wood centre frames as centre ones – and to fill up space – sides of hive (e e) to be rabbeted out to receive honey boxes If desired these might be removed and [illegible] shut all up – this obviates for wintering bees in open air – Boxes – frames to [illegible] [illegible] cards of surplus honey (between plies) may be used – Hive on this plan may be made any width from right to left – so as to have more or less corner boxes – instead of hard wood strips – cast iron or metal strips may be used – If middle B.B. be made of 1/2" strips – may rest on nail heads – and so not afford harbor for moths – Keep say 1/8" [illegible] to let bees pass all around – 1/2" thickness – 1/4" nail head – 1/4" thickness of [illegible] – making one inch – increased depth of frame –



(23) A = ~~13¾~~ 14 × 12 × 12 will give hive holding (10) ten frames — in central apartment
and when corner blocks are put in same size frames will fit in front and
rear apartments = 18 × 12 × 12 will give ~~thirteen~~ (13) frames and about the same room
as in present ~~two frame hive~~ ~~[illegible]~~ 12 × 12 × 12 will give (10) frames about size
of present (13) frame hive — In second and third styles boxes may be used in corners
so as to get same style of frame ~~in side~~, as in central apartment — The three
styles of course may be used for different arrangements of combs — If a [illegible] allow
upper story be used then top smaller roof will set as in present style — and moisture will
pass off around ledge — It will be important to use this — say only 3 inches high = The
B.B. — may in winter be used to shut over top of central apartment — Where smallest
size is used may be well to have upper story of sufficient height to allow [illegible]
of boxes to be put over central [illegible] — If desired before filling up front and rear
apartments with boxes — which may be made [illegible] to allow one frame
to set in front and rear — bees will be left till then to [illegible] to [illegible]
of frames — Of course boxes may be used over all the frames — bottomless boxes
[illegible] easily put in without any holes, after filling being cut from lower
attachment with [illegible] knife — bees will clean out all the running
honey — If smallest sized hive is used and bees need more honey comb than
central apartment contains they will keep in side combs nearest to central
ones = say two in each // Improved Langstroth Hive // To frames running crosswise
will in side apartments prevent giving hive any but very small inclination
from front to rear — upper story may be made with the proper pitch to shed
rain — Upper story of smallest hive may be made deep enough to hold
frames — (20th) Better plan for entrance ~~(strips)~~ regulator — take out about ¾" deep
by ⅜" wide rabbet at each end so that when strip in place bees can pass in and
out at ends — corner blocks not interfering — The whole strip may be supported
on blocks or screw heads any height desired — In winter not over ⅛ to
let out bad air and let in good air — no mice — bees go in and
out at corners — may be used in connection with the regular block —
The 10 frame hive with 6 in each of side apartments will [illegible]

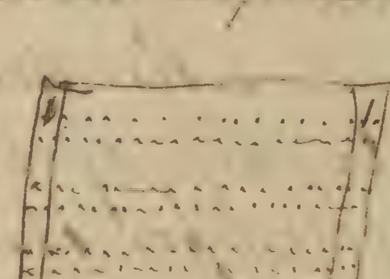
that I have think best to make — It will not be best to think (23)
of upper tier of frames — upper cover just high enough to allow of upper
set of boxes — If boxes are used then all 30 of present size may be
used # On 11 boxes used only over central frames and the others used to
empty or to hold small surplus honey frames — or only one of side
compartments thus used — Easy to keep a powerful stock in height
of honey harvest up to the height of all that they can do —
Hive 12 X 12 X 12 3/4 will take frames for surplus holding 4 cards each 5 X 5 in
the clear — a very convenient form for sale — put each one in a glass box —
or two or any number more — or sent to market in frames put in boxes
(24th) = For common purposes — Let hive have no rear side apartment! Back of 1 3/4
1/2 stuff — with gutter and base and strip — and ventilator just as in old style —
then B. B. will now come out from the rear by unshipping ventilator — and
all filth, dead bees be got out from the ventilator — Shading arrangement
may be used if hive to be without an summer stand. If not none needed =
This style of hive will take 16 frames — Only have boxes over central apartment — or
back — If an additional upper story is used may accommodate upper tier of frames — for
small cards of surplus honey — or double set of usual size boxes — This style to be
give the greatest room at smallest expense — all things considered — water table
is only dispensed with except when upper tier of frames is used — Perhaps better
to make upper story as in former style high enough for upper frames — it will then
be high enough for double set of boxes — It may be best to make cover blocks of
1/2 stuff — and have 15 1/8 inch from side to side — so as to hold 11 frames =
Improved Movable B. B. — Slats 1/8" thick — clamping strips 1/4" thick — 7/8" or more
wide — nailed so as to clinch — heads for feet 3/8" high — Set in [illegible]
pull out M. B. B. — remove heads — [illegible] old woolen rags — [illegible]
on under side to keep warm — to clean out — Remove open ventilator
pull out M. B. B. — clean off — [illegible] — (23rd) Set 7/8" wide strips
nailed on on bottom just fitting between 7/8" corner posts — thus can use corner
post in rear — and back ventilator and room for only one comb in width

[illegible] above and movable partition in winter – which may have warm lining to fit up close to uprights of frames – Will not these side frames in making sections have an excellent effect to prevent bees from making combs outside of uprights
The comb in front side apartment against which bees are to cluster in winter may have a strip of cotton or woolen cloth tacked to the outer outsides to fill between with wood bar to induce bees the more to cluster in and against that comb –



(3,3) high corner posts (1,1) strips nailed same height as Mov. B.B. sides in the [illegible] Mov. B.B. – (Bu, 13) projecting ends of Mov. B.B. to hold it out – ~~Honey~~ [illegible] might be Honey-board – or Cover of frames –

(…) that come just to bottom of hive 7/8th partition – B. dotted to serve as [illegible] shade to extend to entrance – This should be of two pieces – or parts = Front one to cover front side apartment – Rear one to cover all the rest – Made of 1/4 inch stuff for side pieces – 1/8" for slats – nailed ~~clamping~~ clinching – or better double side strips at each segment inserted like comb guides – As no weight of bees is to come upon them 1/8" slats are sufficient – The slats are narrow and as far apart as in brood frames – need not be [illegible] of upper tier of frames is used – spaces between shut up with slats – When these covers are on and that Movable Partition is in place bees summer are compelled to [illegible] to begin their work –

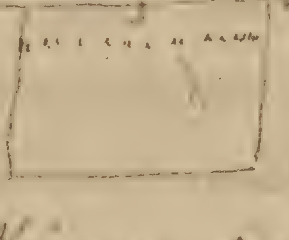


are 1/4 thick by 3/8th wide – ~~with~~ on [illegible] surface

(1,1) left upper one being [illegible] The slats nailed between these so as to clinch the nails –

(26th) Movable Divider – This may be rabbeted out at its upper side say 1/4" as wide as hard wood comb supporters so that divider will come close up to uprights of frames – and if covered with piece of old woolen cloth it will keep all snug and warm – (Small strips 7/8" X 7/8" may be laid on corner blocks which will press upper strip of divider over projecting tops of frames etc –) Divider must have some room under it to clean out dead bees – Space in winter [illegible] with [illegible] – can [illegible] – Hard wood comb supporters – If these

are made say 3/8" thick. may be say one (or 3/4") inch wide ~~A thin strip might then~~
The divider may be fixed to fit up close against uprights — Outside frames —
The two frames next to the uprights should have top strips a little wider
than [illegible] uprights — and made narrow enough ~~with slot~~ cut to allow
combs to come up to say 1/4" of the uprights — on the bottom of the top strip
there be a strip with a [illegible] (usual size strip) to receive the comb — This
can be done on ~~one~~ an old frame of comb — In a [illegible] stick in building unless
the combs coming thus on front and rear close to the uprights the bees are
theoretically?) no longer able to extend their combs outside of and back of the
uprights of the frames — outside [illegible] [illegible]. If the [illegible] [illegible] comb [illegible]
are 1/4" thick [illegible] the outside comb is kept up close there [illegible]
[illegible] 1/2" with (1/8" only allowed on each side of uprights) between combs [illegible]
[illegible] [illegible] the bees for winter — [illegible] [illegible]
[illegible] outside of uprights — the divider ~~[illegible]~~ may in winter
have a warm something tacked to it (or a strip of wood [illegible] attached) so that
it will come up close to the uprights — The dotted line shows
[illegible] as this extends up — In case the bees do not seem to
[illegible] the comb next to the uprights be cluster on [illegible]
against the divider may be used with warm something (say [illegible] of
[illegible] stuffed [illegible] with [illegible]) so that there is no space between the
uprights and divider — (over) [illegible] of [illegible] has many
[illegible] — [illegible] good if not best for [illegible]
[illegible] to [illegible] advances for keeping — [illegible] not [illegible]
have to be almost [illegible] every combs in [illegible] of [illegible] does
not provide for emptying — does not give such access to boxes
[illegible] bees [illegible] — If such [illegible]
[illegible] might be [illegible] in any place — There [illegible]
[illegible] — and [illegible] at least [illegible]
near the uprights say [illegible] 8" — If found not [illegible]

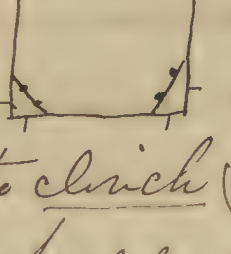


35.6

obtain uprights by [illegible] saw = get out two strips say not over 1/8"
thick — nail these sliding to make uprights — but this is not perhaps
quite wood enough at (a a) for nailing by one to [illegible] —
If deep frames are used it becomes more important still
to get rid of so much thickness of wood in the uprights —

If deeper than 16" — Let them be 12 × 16 (deep) × 13.75 — Frames then have the same
capacity as 14 × 10 (deep) × 16 = old style — When one foot side comb is used
three tiers of boxes may be used — the upper ones coming up above the
level of comb should have a large hole near bottom of one —
One side [illegible] comb only to allow ready access to
boxes, B.B. from back [illegible] — This style [illegible] of boxes
set (without bottom) on strips or frames or on frames directly — If used
for emptying boxes may be [illegible] side frames for [illegible]
On the whole I prefer this last style of frames — If this is used
for boxes on [illegible] plan — then use [illegible] divider with
holes in it for bees — [illegible] frame [illegible] — and [illegible] board
coming up so as to form rest for honey board — and [illegible]
bees —

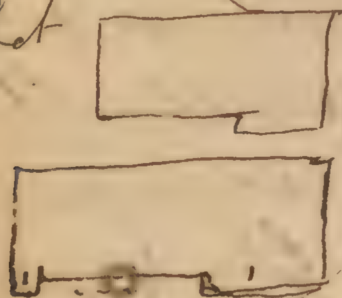
(21st) New style frame. Corner pieces at top as well
as bottom — Uprights and bottom about 3/16" thick —
or 1/8" = Top, bottom and uprights ~~have~~ are nailed to the corner



pieces on an iron surface so as to clinch (one nail from each into corner pieces
another head from each wire make all strong — This plan gets rid of the
excess of wood in the uprights — gains room for comb — and enables bees to [illegible]
against side combs — and makes I think a stronger frame — (..) New clinching nail-
-s heads — → Hive proper — to get place for honey-board — or rather cover of
frames — Rabbet sides of hive to let cover rest on rabbets — cut down the
rabbets where corner boards come 1/2" deeper — Thus you get room with a
[illegible] wood strip — or even the corner boards bevelled up to an edge (not
sharp) for [illegible] — If hive is doubled inside on the right and
left entire space can be got by the doubling — using 1/4" [illegible] and 1/2" or
3/8" posts to nail doublings against

22nd) New plan for Divider or Movable Partition — Nail 3/16th strips between 1/4" double clamping pieces — as in Improved Cabin Comb Guides — nail all clinching — Let one end of clamping pieces on each side project up so that top strip may be nailed clinching against projecting ends — Let bottom strip come within 1/4" of the bottom of hive — these dividers may be made as warm by wrapping so as

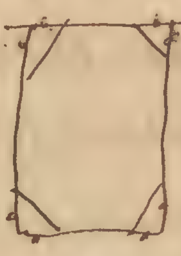
(25th) — To get side frames 1/2" lower without movable bottom board — Let



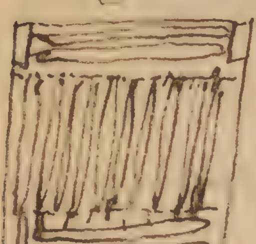
separate sides of hive — this lets frames in front apartment 1/2" lower — (1,1) may be nailed on — or ..... space cut out — a small triangle ▷ will help bees to get over corner —

If strip laid on bottom will keep bees in place — a small triangle will keep them in above —

Oct 4th — Alley's hive — easily adapted to side frames — Let boxes be put in corner — with 1 3/4" holes for bees to enter behind frames — Top boxes may be secured to sides, and on edge of top boxes thin strips fastened to receive side frames — the movable sides being taken out — this economizes all the space — or the corners might be arranged for small frames or slats — (5th) New Frame —



— needs only two nails at each corner — no clinching — uprights and bottom only 1/8" thick — (1/10)" more and the whole frame admirably stiff — ~~at least~~ nearly one tenth of space gained — by new style — so that ten frames will hold more than eleven of old style —



Use no back ventilator — Make entrance 1" high — Use corner blocks in front to get two frames there — Use none back — the spare room gives place to put one frame hanging from front to rear 1/2" lower than the other frames in back apartment — the frames in back apartment for surplus in small frames set in larger ones — or for emptying — away from entrance — and where bees will feel most inclined to put surplus — Top cover roof and all together — like Alley's — Gray's & [illegible] — A thin addition will give room for boxes all over surface — if ever required — but my plan is to discard boxes and get in small frames — or by emptying — Small slats 1" wide 1/8" thick will answer to confine bees when first hived — ~~Movable honey~~ Movable Bottom board with piece removed from front — board or cut might lay just ~~within~~ so as to let bees up near uprights ~~or~~ front apartment could be made warm — divider to shut off back apartment — central apartment has warm craving near it — bees will cluster against comb in first apartment — lodge in that comb — pass from comb to comb &c — (11th) = Style of hive South of Ohio and Potomac Rivers —

The honey emptier and small frames in larger ones for getting surplus honey — enable me greatly to simplify hive for climates of moderate winters — and perhaps if these frames are used for all climates — and cellaring of hives in the very cold climates are wintered in doors — Let front and rear of hive be say 1 1/2 inches higher than sides — viz as in Fig (1) in my book, nail on strips to get the rabbets — Let these strips be bevelled to get more room — as in present 2nd story hives — Let hard wood paper supporters be let in 1/8 and 1/2" deep, jut up 1/2" — ample room now for fingers — of handling frames — the ledges may be nailed against the bevelled strips making all very strong with Bottom board nailed on, too — Roof made Mly. Gray &c style — If boxes on top wanted an addition used — Movable bottom board for cleaning out early got as above — not needed except in cold climates — In rear use frames with small ones for surplus — or empty — If honey for frames ~~used~~ (inside cover) — is used make in ~~two~~ parts — so that these may be easily managed — Impossible to improve on this for simplicity and cheapness — Boxes may also be used below front and rear (frames being kept centrally) three tiers of boxes (4 in a tier) on front — three in rear — Dimensions of hive — from front to rear — 28 inches side to side — 12 inches — depth 15 inches —

June 27. 1883

Matters to be referred to in my new book:

A.B.J. Vol 2. P. 74 – History of the discovery of impregnation of [illegible]

Oxford June 10th 1881 – Bricks for hollow walls &c –

[illegible] (H. G. Brown) [illegible] bricks for building walls [illegible]

[illegible]

[illegible]

2(24) — To secure Impregnation of Queens by selected drones — extract from journal of May 17th 1869 — Let small room have wire cloth windows — meshes too fine for drones — If workers could fly in and out at will — And drones never from the start allowed to fly out — would they not agitate around the room — knowing of nothing better and in the room be ready to do their work." If thought best could as in former plan be allowed to fly out at intervals — or be by [illegible] at intervals — not too many for fear of their getting too highly on the wing and disturbing each other — Suppose by hopefully those hard [illegible] your best drones ~~in~~ or perhaps all the largest and most beautiful young drones [illegible] just able to fly — you have thus the control of the drones to a good degree. It might ^not be very^ be difficult to get meshes which would allow workers to fly in and out and not queens — then the queens might be prevented from leaving their nuclei in the apiary till they were five days old — about a week best — Then leave part of their colony in a nucleus box set on stand of old one to catch up and retain returning bees; give [illegible] water it needs to keep them quiet — and carry rest in small box to small room — feed them and liberate queen — If she does not take flight of her own accord let come in the bees on outside of nucleus box — Set [illegible] nucleus with drones have no unmated queen so that if your queen enters it she will not be killed — If [illegible] on your own by water easily done here — As soon as one fertilized bring another — or bring several at once — easy to [illegible] the Instead of small unfurnished room a tent might be used. Experience must decide where best — to put windows — how large the

June 1st — Queens in cool high weather early in Spring but in these often fail of getting impregnated — If this plan answers easy by artificial heat to make some come so early that they will be fertilized — then say some reserve be also! If artificial heat is used may be not cause them to fly earlier or later than common and be impeded even without any wire screen &c ... merit! Heat up say to 90° and feed at 106.6 ...

2u(28) — Queen Cage & Mailing Box — July 24th 1869 —

Let one side of mailing box have say lower 1/3 covered wire cloth so that queen can easily feed herself when it rests up against comb — or if preferred a small slide to pull out and allow her to get on comb — Make the box so that it will easily go between two combs without spreading them too far apart — To keep water from evaporating from sponge — dress sponge with feather dipped in hot wax the slot in which sponge is placed so that water cannot evaporate through the wood!! Use mailing box for introducing queen —

Jan 12th 188[illegible] [illegible]

[illegible]

2w (28) — Surplus Honey Receptacles —

July 17th. 1869 —) M. M. Baldridge has written his plan of glass jars to receive pieces of comb cut out from frames — square or flat — to be self sealing and fit for use for jellies, preserves &c — to hold 1 pint, quarts, 2 quarts — Let such jars be made with grooves in sides — so that small boxes without sides — perhaps without bottoms slide into grooves! Let such boxes on strips over frames in front and rear — let outside ones only have glass in grooves on one side — the others have movable glass sides resting on strips — should be a guide comb — for such as these on

sides — and about 1/3 up — Easy to slide these when full into the jars — and if kept air tight — honey would keep long time in jars and such boxes — Easy prepared for market — say six together — put on a thin 1/2 board held by clamping rods — as fast as one sold — screwed up tight

[illegible] bottom — the
[illegible] I [illegible] between the [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

them — thus — Undoubtedly all the Queens were preserved —

Last Summer (1850) I was requested to "take up" a swarm of Bees which had been established for some years on the grounds of the Pa. Hospital for the Insane — The swarm was originally lodged in a box a foot square — which was placed in a small bee house — in which were shelves like those in stores. The first peculiarity was the exceeding irascibility of the Bees — they were in the edge of a grove at a considerable distance from the house and were seldom visited — they did not act at all like domesticated bees. The second peculiarity was the immense number of bees going and returning — very many more than I ever saw before in any single swarm — Third peculiarity — the long-protracted resistance offered by the bees — it seemed almost impossible to overcome them whereas domesticated bees are after their first resistance, especially when their honey combs are taken soon subdued.

Fourth — The extraordinary amount of brood comb — more than could have been bred from one Queen according to any theory ever yet broached of the number of their eggs. Fifth. Numerous Queen cells not only in the old box but in the combs built in the shelves — From all the

This is but a confirmation of the new view respecting the astonishing fecundity of Queens

Queen Cells — no proof that they raised Queens in them —

Queen Bee — From all the facts stated I am satisfied that there were several Queens living in harmony in this colony — In "Cotton's My Bee Book" is a cut representing the interior of a hive which from the peculiar arrangement of the combs was supposed to have held two colonies — the combs were separated as in the case mentioned by Dr. Packard — Undoubtedly Queens do not ordinarily agree to live together — but it will seem that sometimes they do. Might not hives be so constructed as to secure this? and if so would any advantages result from such a course? It is worth while to experiment farther on this point.

Doubtful very —

Queenlessness — April 1st noticed one of my swarms restless late P.M. running out and around — at once suspected Queen gone — listened heard mournful hum — April 2nd opened hive — found royal cells commenced — Noticed same restlessness in a hive which had lost its Queen in cold weather — If bees have the means of replacing loss now is over — 1 one which had not hatched for weeks until taken out —

(June 21. 1854)
Queen Young — To prevent casting take away all Q's but one — put that one in a tumbler so that you can see if it hatches —

Queen how to rear from Drone Eggs — see it a —

Queens — How to arrange hive for rearing — Let the hive have two dividers — three
(April 23 — 1850) long boards — 2 slots enter on front — ~~two~~ one on rear — each have room for three combs —

Sep. 18. 1857

Queries — What would be the effect of making covered way so deep that bees cd not reach tumbler board except from the edge? Might it not be more certain to keep the Queen always below? It cd not much delay the work of the bees — If a little too deep they wd fill it with comb —

Queens many — Suppose in Fall many Queens in colonies to be taken up — might not a number be put into a cage — with apartments separate — bees able to feed but not to enter to kill? Would they feed all or any one?

(June 21. 1854)

Queen — how do bees when hived know that she is in? They will all enter even if she is held in hand — or they are drummed and there is none with them — Then in they must ascertain whether she is there — for as soon as bees cease to enter in numbers if she is not with them they "boil over" and rush out to take wing — (*See below) I can by putting more to enter cause them often to go back — till those are in — but soon they rush out again —

*To make forced swarms take wing so that they will respect their new location — secure Queen before she can enter — Let them boil over — Have Queen on branch with some around her — let them take wing and settle around her — then put them to new location and old stock on former place — If this succeeds a point of exceeding great importance is ascertained — (Eureka?)

Queen — Italians Feb. 18th 1861 } Where we have common drones may we not get queens from them — Give a stock ~~honey~~ that has Ital. drones liquid honey an hour or two before common drones fly. When its drones are in full flight — having young queens three or more days old that have been prevented from flying (as in Mr Palmer's [illegible] p. 129) — before [illegible] these drones — might not a number be thus mated in a short time? If plan successful we can get them impregnated from stock having the choicest drones!

Journal — June 13th 1868 (See 110 —) [illegible] [illegible] — [illegible] the comb [illegible] [illegible]
[illegible] for [illegible] [illegible] queen [illegible] — 13th. 65° — [illegible] queen [illegible]

R a

[illegible]
[illegible] a caged queen — [illegible] to [illegible] — [illegible]
[illegible] — [illegible] from nuclei — [illegible] caged queen — [illegible]
[illegible] the others — [illegible] caged [illegible] [illegible]
[illegible] caged queen. The one having strange caged queen has lost most of its bees
when [illegible] [illegible] — The one whose queen was
removed [illegible] to [illegible] — [illegible] released) [illegible] in the [illegible]
The ones having their own queens (caged and uncaged) have [illegible]
most of their bees. In several instances before I have noticed this propensity [illegible]
having their own queens to keep very still the 1st day — [illegible] with black
queen of [illegible] — all the bees but one or two left before the [illegible]
[illegible] the bag! They flew about [illegible]
when [illegible] gave them another [illegible] with [illegible] queen they
soon began to desert — put in an old caged queen this quieted them — [illegible]
the [illegible] — [illegible] queens very [illegible]! Opened the
hive with close fitting tops — [illegible] comb [illegible] — [illegible] no difficulty in
closing the [illegible] — [illegible] faithfully — I [illegible] notice that when bees miss
their queens and are greatly agitated — if they [illegible] to them [illegible]
they [illegible] queen raising — this the way to get [illegible] — In [illegible]
queen at this season for making nuclei [illegible]
[illegible] when she is released — [illegible]
[illegible]
(14th) 59° [illegible] — [illegible] with close fitting tops clasped! [illegible]
[illegible] — [illegible] large number [illegible] queen [illegible]
[illegible] — [illegible] in — Put a queen [illegible] — [illegible] it off! [illegible]
[illegible] — a [illegible]
and did not [illegible]! [illegible] of [illegible]
[illegible] (16th) 68° — [illegible]
[illegible] with [illegible] queen of 13th — [illegible] found the bees
[illegible] — Some of the bees [illegible] queen
found this [illegible], [illegible] bees [illegible]
[illegible] queen [illegible] very [illegible] — This [illegible]
from [illegible] queen — [illegible] in [illegible]
[illegible] without bees [illegible] — [illegible] caged queen
the other [illegible] queen raising — [illegible]
and [illegible] queen raising — [illegible]

[illegible] — Put [illegible]

[illegible] — [illegible] of the [illegible] queen

The [illegible] 3rd [illegible] a [illegible] R

[illegible]

[illegible]

on my [illegible]

[illegible] them [illegible] regard as the most [illegible] — but

there [illegible] — Keep them shut up [illegible]

[illegible]

[illegible] so familiar as to [illegible] them [illegible]

their [illegible] warm about night (three days [illegible] give them — [illegible]

[illegible] — [illegible] queen cells [illegible]

[illegible] — they [illegible] of them — [illegible]

[illegible] — they were nearly ready to [illegible]

[illegible] — Formed another colony for my [illegible] — The bees

[illegible] the queen [illegible]

[illegible] — The best day for honey [illegible] — 16th (66°)

In putting my nuclei [illegible]

one — A fertile queen [illegible] another nucleus [illegible]

escaped the 8th — At that time after found her in her own nucleus! She had just

began to lay [illegible]

(17th) 58°; 67°

[illegible]

Another queen fertile A.M. of 20th day — [illegible]

[illegible] queen cells [illegible]

[illegible] — They had a [illegible] queen — [illegible]

[illegible] just right

better than queen cells — [illegible]

[illegible] with a fertile queen [illegible] did [illegible]

[illegible] — (18th) 70° [illegible]

[illegible] eggs — [illegible]

[illegible]

[illegible]

[illegible]

[illegible] — Bees [illegible] at the [illegible] — day hot and smoky — [illegible]

doing next to nothing — [illegible] queen that has [illegible]

her fly [illegible]

20 minutes [illegible] — in 15 minutes

[illegible] — Saw another [illegible] in 11 [illegible]

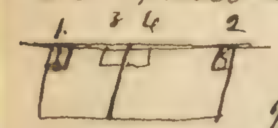
Repentance, "Altho' a ~~late~~ sincere repen. is never too late, a late repen. is seldom sincere." Bishop Hall

Repentance, "Were weeping repen. Hell would be full of penitents: for there is both weeping and gnashing of teeth." Jer. Taylor.

Revivals of religion, A reason why in some instances they add so little to , strength of the churches. (Daniel Clark's Sermons to be used in religious meetings. P.146.9-

Regular Comb—

June 5th-1852/ Have six perfectly regular worker combs worked well down put them alternately with six empty ones in a hive with a new swarm— when they have worked two or three days take these from them and give them six empty ones— then use these same combs in the same way for another new swarm in this way regular comb may be secured for swarm after swarm— with but a small capital to start a how— If the six to start with were combs of last season with brood so much the better— I feel that I have got it now—



If comb be stuck in bars it should be at corners— as 1 and 2— If there is enough also at 3 and 4— they attach them to , sides regularly— If only in one place it should be in the middle— middle upright piece is of no use—

July 1st 1852— Resin test for attaching comb—

La Reine — It sometimes happens that the small tentacles on the feet of a Queen are injured — and she is not able to travel easily and rapidly over the combs — this impairs her worth — I had one hive (1857) thus injured — and have often observed slipping as it were — losing her hold and nearly falling —

Unfecundated — If bees have a fertile Queen they will if deprived of her at first kill an unfecundated one —

Queenlessness — The same day or the day after the loss of the Queen the bees exhibit their sense of the loss most decidedly — run about — in side out side — a close watch shd be kept —

Removing Queen — It will be well to remove every Queen in the Summer of her third year — their fertility seems to decrease — The proper time to remove them is just ~~after~~ before honey supplies begin to fail — and before the drones are destroyed. This is the time when the bees can afford best to be reduced in numbers — while they are consuming rather than producing — the young Queens will soon replenish the hives so that they will be strong for winter — These removed Queens might be made to form small swarms — three or four to a hive — to be used next Spring — and then killed next Summer — If there are no Fall supplies of any great account the swarms deprived of their Queens may be allowed to raise their Queens from the egg — or one just sealed may be given them — but if Fall supplies abound try to give them a young Q. hatched or just ready to hatch — The hives will be actually benefitted when honey is scarce for having the rearing of brood cease for a while —

Robbing – Have sometimes noticed a hive being robbed which was busy working and all unconscious of what was going on –

Journal from [illegible] – not sensibly changed – weather showed nothing but [illegible]
June 18th 1863 – opening of the [illegible] – about 8 A.M. – seems to be the best time for [illegible] – [illegible] that [illegible] a field [illegible] a few [illegible] killed – [illegible] to have caged her – Made a [illegible] – did not get the queen – [illegible] a caged one in [illegible] ([illegible] a [illegible] for [illegible]) [illegible] – In a few hours queen [illegible] – [illegible] – the bees [illegible] in the [illegible] – [illegible] – Got a queen from Mr Cary

19th) 60° – Mostly cooler – cloudy [illegible] P.M. – but little honey got – Gave Mr Carys queen to a good queenless colony [illegible] – Best queen [illegible] been [illegible] out – Queen found on the ground her wings clipped [illegible] – [illegible] had been taken off – and the bees much disturbed – Made an effort to [illegible] colony at 4 P.M. – did not get queen – bees dispersed – [illegible] only one left in the [illegible] – [illegible] the youngest queen [illegible] a few eggs [illegible] the sides of the cells – this is [illegible] cut her wings (a great mistake) she was [illegible] this P.M. – think that she had [illegible] before [illegible] in my book – I am very [illegible] bee [illegible]

20th A light [illegible] last night – weather very cool – 50° at 12 M. – 4 P.M. – warm [illegible] bees [illegible] – [illegible] for clover – I saw a very curious queen cell – (1) a [illegible] upon neck of (1) – [illegible] (2) [illegible] – this queen [illegible] very bright (2) [illegible] – Were 17 queen cells in large colony of (54) queen out to Mr [illegible] –

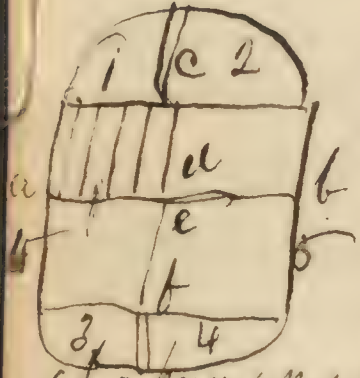
(21st) 58° – Mostly cloudy – bees do very little – (22nd) 60° – Mostly cloudy bees [illegible] – Made a few [illegible] – Saw [illegible] queen [illegible] – she was [illegible] 3 P.M. [illegible] – on very [illegible] – (23rd) 48° Queen [illegible] cloudy in P.M. – bees [illegible] into the [illegible] – [illegible] – at [illegible] queen [illegible] at [illegible] P.M. [illegible] queen [illegible] ([illegible]) [illegible] – [illegible] queen [illegible] – [illegible] a queen [illegible]

[illegible] had [illegible] — Gave yesterday a just hatched queen to a nucleus having
fertile queen and bees [illegible] — [illegible] for a few [illegible]
their fertile queen [illegible] caged [illegible]
[illegible] they had got the [illegible]
[illegible] and found the little [illegible] caged [illegible] (26) 48°
Bees [illegible] considerably — nucleus just get enough to live — Had a very large swarm
from a [illegible] hive — found [illegible] queen cells in the [illegible] but
one sealed — all of them very large and [illegible] crammed with jelly — found
jelly in [illegible] queen [illegible]
to compare with the swarming hive — It [illegible] not very much [illegible] —
[illegible] not yet in the [illegible] — There has been some honey flow [illegible]
offered a just hatched queen to the nucleus with the fertile queen — one of them
[illegible] I
had just caged — she was [illegible]
The colony with the fertile queen [illegible] — (28th) 58° — Cloudy [illegible]
rain at 3 [illegible] —
and [illegible] bees — [illegible] flow [illegible] — Some of the
large cells [illegible] had a [illegible] of jelly! [illegible]
old, fertile queen caged [illegible] fertile caged
queen [illegible] by the bees — A large [illegible] queen [illegible]
cell until three days after the [illegible] — [illegible]
[illegible] no [illegible] bees — [illegible]
A queen [illegible]
Old queen alive in nucleus with two sealed queens — Nucleus get just enough
to live — [illegible] a just hatched queen [illegible] to the nucleus [illegible] fertile queen
was just caged — Removed [illegible] from three new [illegible]
[illegible] — the other [illegible] —
[illegible] season is [illegible] should not have [illegible] until after
a few days [illegible] — [illegible] this season [illegible] one
of taking a few [illegible] from [illegible] hive — (29th) Had a splendid rain
last night — some slight showers to day — close sticky weather — [illegible]
[illegible] — the bees worked better than before this [illegible] — Had
a good [illegible] (20) queens — [illegible] cells [illegible]
[illegible] queens — [illegible] another (Queen caged) [illegible] nucleus
[illegible] with fertile queen — got it away before [illegible]
of them [illegible] — [illegible] after [illegible] queen [illegible]!! Bees when
[illegible] queen [illegible] Go

Rough Thoughts }

Queen Palace.

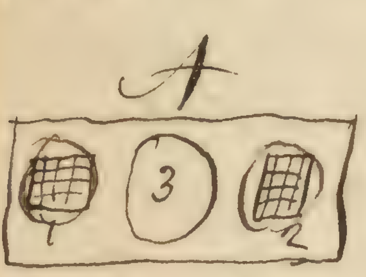
A hive of my size with one permanent and two movable partitions may be fitted for four small swarms and thus answer as a Queen ~~bee~~ palace - at any time it may be changed into one hive -
In the Fall put four small swarms which ought not to be left in their large hive - into a hive divided into four parts - by gauze wire in the partitions they may all be made to have the same smell - this will make them peaceable - ~~join~~ they shd be driven out into boxes - carried 3 or four miles - then put in - kept away some time - then brought back - have separate entrances - small for the back ones -
In Spring may be used as a Queen Palace to furnish fertile Queens for Ar. swarms - and at any time the four feeble colonies may be converted into one strong one - leaving one Queen - after using all the others. This dispenses with the need of any separate Queen Palace - and turns all weak swarms ~~to~~ the best ~~cogitations~~ advantage - A square hive with uncommon protection against cold - best for this purpose - Ar. Queens may readily be obtained in this way in 1 Spring - Put a divider very thin board - or metal - into 1 middle of a strong colony - shut up one half - next day open this and shut the other - give water when shut - continue this until division is complete - The entrances shd be -



ab = permanent divider -
cd, ef - movable

1, 2 - Entrances
3. 4 - Do -
a - 5. 6 -

A



A - is a permanent divider.
1. 2 - Gauze wire
Open wide

The hive may be divided into three by two divisions of the usual form—and thus two colonies will rear artificial queens!

separated—a whole might be bored for each with an 3/4 inch auger through the platform or by a board set up on edge on the alighting board they might be kept separate—The part without a Queen will begin to rear Ar. Queens—these may be cut out for use when sealed over—At any time the colonies may be re-united—

Fertile Queens—are worth much more than Ar. Queens for rearing Ar. Swarms—We must insert the Ar. Q. at least two days before they hatch (or say one)—to be certain of getting them from 1 colony in which they are reared—They will not leave for impregnation until they are at least 4 or 5 days old—say 4—Two days more will elapse before they will lay—At least a week is thus lost willing and more time—if the weather when the A. Q. wishes to leave for impregnation be unfavorable much more time may elapse—What a vast multitude of eggs might be laid in this time by a fertile Queen—If we attempt to rear the A. Q. from the egg or young worm for the Ar. Swarms—we shall lose nearly or at least three weeks—three weeks more will elapse before any eggs will be brought to maturity and by this time the colony will have become too feeble to be worth much—If they have constructed much comb before the hatching and laying of the Ar. Q. it will most of it be unsuitable for brood—Even one week's gain will be of great importance—The having on hand fertile Queens of very great importance

Ar. Queens- If all the A. Q. are taken away before they are hatched- brood comb may be given under tumblers- for rearing more in a way most suitable to be taken away- If this colony grows too weak they must be strengthened by having brood with bees sealed over given to them— A hive thus managed might be made to furnish A. Q. for the Q. palace so that the four fertile Queens might be taken away at once and their places supplied with A. Q.- which would soon become fertile- to be taken away in turn to be after they have laid enough to keep up the number in the small swarms in the Q. palace— If I found after dividing that the Q. was in that part which was strongest I'd determine the most ~~brood~~ bees to fly to the Queenless part— This ought at all events to have the most bees.

Queen Palace- Let the hive be just the same as the other hives- having 12 frames- This will answer for 4 small swarms- to be used for rearing Queens- Late in the Fall transfer to it four small colonies- be careful to give them sufficient honey and in good combs for breeding- set them where they will be quiet and give them all possible protection against cold- If there are no small swarms in the Fall, in the Spring a hive may be divided into four- or such a quadruple hive may be made by taking combs and bees from other hives- and shutting them up until they begin to rear Queens- this should be done as early as may be- From these colonies take all the Queens as soon as they are sealed except one from each- as soon as the new Queens have filled the combs with eggs remove them to form artificial swarms- If others just ready to hatch can at once be given them- they will soon have fertile Queens to be used again- The ability to supply fertile Queens or at least Queens just ready to hatch will enable the Apiarian to multiply his colonies to a wonderful degree- The matter must be so managed that the Queen rearing in these four colonies will be of different ages-

Queen Palace— If there are weak colonies in ı Fall—proceed as follows—

Transfer all ı bees in one such colony to three combs—put in divider— next day shut them up—carry ı hive to another weak swarm—transfer them (or late in ı day bring their hive to ı 1st) carry ı hive back— next day □ has its tickets □ are shut up— carry it to a 3rd— and next day to a fourth— each new one put in must be shut up about three days— having water & and be let out when sun an hour or two high— dont let them all out ı same day until they are well accustomed to their different entrances— Keep well protected in winter— do this in September— If only three are put into a hive ı entrances may be kept quite distinct— Suppose 24 Queens of ı 3rd year are to be removed— Put them with the same comb and bees into 8 hives—Queen Palaces— Use these next season for ı swarms that want a fertile Queen— Use also ı Queen Palaces for rearing other fertile Queens— At the proper season kill ı Queen of 4th year— On this plan there will always be an abundance of fertile Queens in full vigour

June 4th— Take Queen cells away from main hive— then put brood combs with eggs of workers and place on blocks under double glass this will enable us to have a lot in the most convenient form for use—

(June 4th 1861) Queens how prevented > Clip wings of queen—and keep hive on board on the ground— then [illegible] she will crawl back and the bees will return— If they allow her to [illegible] a while [illegible]

J. Q. this will answer—

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Rois prevented see R. w—

Swarming. May not early swarming be sometimes prevented in this way? The royal cells are tenanted the bees are almost ready to swarm when a long spell of unsuitable weather sets in and the young queens are matured sufficiently before suitable weather for swarming returns to excite the antipathy of the old queen by whom they are destroyed — Another set must be reared and thus much time is lost. In this way although the hive is crowded early in the season late swarming may take place. Observations might be made on this point in observatory hives. A new swarm always work with more energy than an old stock which has not swarmed. Two swarms united work with amazing energy. W'd it not be well to rely for honey upon new swarms — doubled — and placed in hives suitable for storing?

April 14th 1853 —
1st Swarm prevented by using sealed Queen — or keeping entrance too small for Queen to get out —

Late swarming — If hives are very full of honey late in the Fall may it not interfere with early swarming in ye Spring? The cells are not suff'tly cleared for breeding — and those which are empty are liable to be filled with honey fresh gathered — Does not this account for the fact that late swarms if they fill their hives literally with comb and have honey enough to keep them over often swarm ye earliest?

June 2d 1852 — In an exhibiting Apiary it will be of ye first importance to make bees swarm so as to exhibit beautiful appearance daily — can it not be done by having new swarms or bees without much comb — Queen confined in a Queen cage — and then shaken out or in some way made to feel her absence —

Swarming. After swarm comes out if all things favorable in a few days surplus boxes in which old stock cannot work may be given it —

3
3 Stand for Hives See
Sc — Sa

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Shellac (Lac-lac – at Wile – Sea (Qu-6) =

Shaw-see So – a S

~~Late~~ Swarming. In regions where the food is very abundant but does not continue long – it may be questioned whether swarming hives managed in the usual way can ever be of much profit. – The old stock will make but little surplus honey and the new ones seldom any – If in such places – swarming could be secured by early feeding in the time of fruit tree blossoming – and the ~~best~~ casts were returned to the parent stock – both the old and the new stock might be relied upon for surplus honey – The non-swarming plan might be tried with advantage if every third year the old Queens were removed – and young ones sealed over or mature were supplied – Artificial swarming on my plan so as to secure early and very large swarms would answer well – If there is not good late pasture – all attempts to multiply bees very rapidly will fail – unless recourse be had to feeding – and this is expensive –

Signs of swarming – All signs are fallacious – Every appearance of swarming is often exhibited – but the bees do not swarm – Sometimes they swarm very suddenly and with no previous indication – I have given up all idea of any certainty in prognosticating – Bees staying at home, when other hives are working briskly a tolerable certain indication – Also playing or fluttering about the door –

Excessive Swarming. – may be prevented by removing after the first swarm has left – all the royal nymphs but one – The others may be used for rearing Artificial Swarms –

Plan of management – If the object to secure large amounts of honey and yet to multiply colonies – As soon as a hive swarms (If one does not swarm soon enough drive it) put it in a hive about half full of comb, honey and brood taken fr. a strong stock – Such a colony will from the hatching of the young bees hold its own until those fr. the eggs of its new Queen are hatched – It will at soon fill its own hive and boxes. glasses &c If it has an old Queen before the combs are filled it sh'd be supplied with a young one – (Vide Honey). This plan avoids all the objections to moving – and with my movable frames may easily be done and will secure in good season powerful stocks for honey gathering –

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Sermons, Designed to be used in religious meetings. by Daniel Clark
Very plain, and practical – most excellent –

Slats for hives – without movable slats no kind of hive can be used to the best advantage – The success of hives with slats will depend upon having the combs properly fastened to a single slat – so that they can always be removed at pleasure –

Doubled or strengthened swarms – The stock from which about half of its comb, honey, and brood has been taken, (say any other box) not being removed from its place and not losing any of its full grown bees – will set to work with astonishing vigor to replace its loss – and will soon either swarm or deposit in the boxes surplus honey – The swarm that comes off naturally may be hived in any common box – until their hive has been furnished with the combs &c from another hive – the hive thus furnished may then be set on a sheet and the bees shaken by a jerking motion out of the box before their intended habitation – In any operation involving the removal of young brood the apiarian should remember that it is unsafe to keep brood comb for any considerable time from the bees – if the ~~brood~~ young once become chilled by too low a temperature they are pretty sure to perish –
If it has been necessary to drive the swarm – then the strengthened swarm should be put on the stand of old stock – this should be shut up in the dark about 48 hours – and then be put in a new place as far as convenient from the old one – about sun-set – of course it should have its water feeder –

(May 11th 1861) Legs for hive – there need be none in front – set the hive at first on a board – put two under the hive – to get a [illegible] of grass – but it would be easy to move hive – and keep grass short – [illegible] would probably cause honey to be kept [illegible] [illegible] bees could be forced [illegible] [illegible] – (16th) [illegible] B.B. [illegible] between them no chance for bees to get in hive – (24) Have only one board [illegible] the back side – (28) Have only one leg in back movable to suit different elevations – So that rain in the groove will be checked by a small nail.

Strengthening a weak swarm – Placing it on the stand of a strong one may weaken former too much – Before sun-set place it on stand of strong one when you have caught enough bees – return strong one – place weak one on its stand – keep shut till evening of 8th day – Do this in Spring – but not when bees are gathering – also danger of quarreling – The bees taken from strong one will not sensibly weaken it – but will be invaluable to strong one –

2nd Swarm – Give a hive a Young Queen – day it has thrown its first swarm – will not – This prevent after swarm –

2nd Swarm – delayed long enough for Queen to be sealed up – if this were not done may all perish –

(April 1st 1861)
Stand for hives = Under projecting ledge at each back side have two legs screwed say 7"×7/8"×7/8" – also two on the front side – 5"×7/8"×7/8" – (instead of 7/8" wide better 1½" wide) The 7" and 5" are projections below bottom board – have them come up so as to set ~~[illegible]~~ under ledge – leaving room to [illegible] – No trouble to [illegible] here – take out [illegible] of the screws [illegible] exactly [illegible] the legs sideways against sides of the hive – Hives legs set on [illegible] – [illegible] [illegible] of legs [illegible] about 1" – If the hive is to have a deep bottom board then the legs must be kept farther from the ledge – so that when screws are pushed [illegible] [illegible] 2" below – (April 10th) Same legs for deep B.B. [illegible] [illegible] corners – to keep [illegible] from [illegible] when legs are unscrewed. (May 10th 1861) In Hive unship front legs – and you have to [illegible] – With deep bottom board [illegible] from [illegible] nails for legs if [illegible] might [illegible] the legs for moving – [illegible] [illegible]

Sting of the Bee. Personal Experience - that in course of time the venom loses its power - Same fact noticed by an old writer whose treatise is quoted in "Cotton's My Bee Book." Curious remedy proposed by him for the sting of a Bee. another sting as near as possible in the same spot - Genuine Homoeopathy this - L.L.L. first trial of this remedy.

Irritation from friction - all remedies which require to be used with rubbing more than useless. as in this way the poison is rapidly diffused thro' the system. Way in which an old musquito bite may be revived by rubbing. Best mode of guarding against - to cover the head, especially the face with the hands and quietly retreat. Bees in the early stages of Dysentery very irascible. Breathing on them shd be carefully avoided - as it always provokes them - With proper management bees are by no means irascible insects th many suppose them to be - We are told th persons have died from effects of a single sting - and so they have from the scratch of a pin - only in both cases the system blood must have been in a peculiar state - It is very rare th we read of any serious consequences from a sting, fatal while every year we are pained with loss of life from hydrophobia - Bees may be so abused th as to become absolute nuisances - they may be so domesticated as to become almost as harmless as flies - Honey Bee - losing its sting - reason - intended to be domesticated - this insect -

Bees when rearing Y. Q. much more disposed to be irritable -

Shipping Bees - see 2 in (11) 1868 —

Simplicity. The simpler the construc' of a hive the better if it can be made to possess the necessary requisites of a good hive — He who unites the all important requisites in the simplest and cheapest manner has the best hive — A thorough practical acquaintance with the habits of bees is indispensable to the construction of a good ~~[illegible]~~ hive — Although my hives may at first sight appear quite complicated, yet I am persuaded that a close examination of them will show that they are quite simple in their practical management — The human hand is in one respect a very complicated piece of mechanism and yet with what beautiful simplicity does it work? All its various parts have their important uses and not one c'd be spared without an injury to the whole. My hive with all its various parts will be found to require less time and trouble in any of the practical operations [illegible] — such as hiving the bees — depriving them of their spare honey &c than the ordinary box-hives of the very simplest construction — If the peculiar arrangement for

Size of the hive — This must depend upon the productiveness of the district in honey — The Polish hive is immense — I recommend that the smallest size used should be not less than one cubic foot in contents — I have used thirteen inches — in Mass with great success — The use of a divider will enable us to use a larger size — and the bees may be confined to as much as they can occupy with advantage —

(April 6th — 1861) My frame 18⅛" × 14⅛" × 13" deep — Hives already made may have the three inches put below of capacity when the [illegible] are [illegible] [illegible] [illegible] Frames already made may have [illegible] [illegible] [illegible] [illegible] [illegible] hive large under no bee [illegible] [illegible] [illegible] with the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] Larger size can only be determined after long experiment — (July — 1862) My frames will contain cell room for about 6000 worker bees — 9 frames would allow room for all the brood that could be in cells at once in the supposi° of 3000 eggs per day — the other three for honey bee-bread — thus 12 frames would give ample room — To get more surplus storage room — let there be 9 or even 12 boxes on top — the

(over)

Soverignty Divine, the sinner's only hope. Phillip. Manly Piety P. 21.. 25-

Scents – Much written – Bees sometimes have chosen their place and go without lighting – Sometimes stop in queer places – Mr Zollickoffer Sr – A small swarm on a fence rail – made comb – gradually dispersed – Another on a wheat stack made some comb – At Dr Zollickoffer Junr – lit on a willow tree in the lot owned by the Hospital – made comb – and was stoned by boys to get the comb and honey – Two swarms were hived near where they lit – moved at night – Next Aftn. at 10 O.C. – one left the hive – was followed about 1/3 of a mile – hovered over a felled tree – 2 years felled – bees were then observed going in and out of a knot hole – swarm now descended like a funnel and entered hole – as soon as well in ~~another~~ the other left its hive and did the same – tree cut – and removed to the house – bees worked well – Two swarms entered a house at intervals of a day – went under the floor in diff't places – A bee keeper at the Lazaretto has noticed that swarms generally stop when they come to the Delaware – and settle in his garden – and are easily hived –

[illegible] two frames more with a little wider side ledges would give room [illegible] – for three tiers of boxes – if frames worked from front to rear – easily gained by extending cover over front frames – and making a shut-back frames – or brackets to hold a support for honey board – 12 boxes may be got in a hive with 12 frames with but very little extra expense – By removing boxes this space sufficient – thus having hives for ten frames might use them for new swarms – putting the old stocks in the 12 frames – This season I should have done better with 12 frames – If the honey boards are all made on my old plan (with Baldridge's spacing) 12 frames will allow 3 tiers of boxes – and these boxes may have tops and bottoms 6" × 6½ – 6" on the sides for glass – or if the side ledges are made 1/8" wider – the boxes may be 6¼" × 6½" – 6½" is better for three store combs than 6" – and 6" is too wide for two store combs – Measurements thus – Hive 16.875

2 Sides 1.75
2 Ledges – ~~2.50~~
25

Gain in

3 Boxes at 6.25

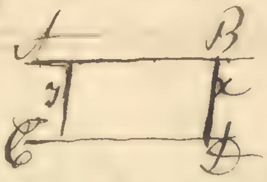
16.875
1.75
.75
19.375
18.75
.625

Room for play between boxes = .625

This arrangement gives up
to the best advantage all the surplus
storage room –

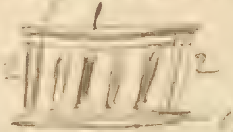
Stand for Hive (May 10th 1860) Made as follows— to make more

Mr Beldridge has suggested a box about six inches high as a stand for hives — no top — no bottom — I would



AB and BD to project at B six inches beyond y — BD — 3" — Board to nail over the project forming alighting board — & to be 2 inches higher than y — or rather & to project out below 2 inches more — sides of hive to project 1½" over sides of stand — over first projection cotton cloth [illegible] [illegible] [illegible] edges that come on ground might rest on bricks — painted — board projecting in front to be as wide as outside of portico — perhaps outside — This with hive to have back portico just one half size of front one — the stand and hive all painted or coated with "[illegible] [illegible]" except alighting boards and traps

1867 Nov 22 Straw for hive — Tie small bundles of straw and lay them over the frames in place of honey board — will keep bees warmer and let moisture escape — (See 1862—) Let 1,1, 2,2 be bundles & then [illegible] over the frames — then [illegible] [illegible]



of 2,2 — bundles to cover the narrow spaces — [illegible] [illegible] [illegible] [illegible] the straw [illegible] [illegible] for feeding — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] bundles — If the bundles quite [illegible] [illegible] [illegible] [illegible] of frames — [illegible] [illegible] [illegible] [illegible] the [illegible] ventilation [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] through the [illegible] — bundles 1,1, may be [illegible] [illegible] [illegible] [illegible] at least 2/3 of the space over the frames. 2,2 — may be very small — or slats would do —

Shutting up bees — In very windy weather — the hives ought to be shut up before the bees commence flying — ~~allow~~ or very many will be lost — Having ventilation from below they will not suffer for want of air — having water in their feeder they will not need to leave the hive for obtaining it —

Superstitions — Night — Bitter — Peruvian Drops — mention some of them —

Surplus Honey — If there is a box placed on the hive — and this furnished with movable frames the comb may be on this — In this way the largest amount of honey will no doubt be realized — In hiving a new swarm they might have access at once if swarm is put up to the upper frames — Some bees no doubt will be raised in it but breeding will soon be below — This upper box might have no frames — or when the honey board is in two parts — the upper box might set on only a part of the hive — It might be used to secure comb for tumblers &c — Where honey is acceptable to market this would be a most excellent plan —

July 1st 1867 / Use top box for surplus honey — make roof like picking house — movable — which may be made as in Fig I. This sets of small frames used — or slats — these best if honey to be obtained — two frames might be used to get out and have [illegible] best [illegible] —

Nov 10th 1885 / Make parlor cupboard — get as much additional space in rear by a shelf — Also make honey board all level — no projecting clamps. Make top cover with movable roof — deep enough to hold usual size frames — and wide enough from front to rear to cover parlor roof and shelf — make front rabbet as in Fig (1) — have central 7/8" ma. ~~divide~~ partition for large frames to rest on — In back apartment use slats or small boxes or Colvin 4 frames in one large one — large frames running from side to side and not from front to rear — Hive with ten frames used thus give room for storage of 110 to 120 lb. Hive with 13 frames for storage of 140 to 150 lbs of honey — Storage room got thus in cheapest way — Excellent arrangement for cold storage in winter — Still supply the same top arrangement for present two hives in use without destruction of existing parts! Remove roof of top cover and make it movable. Plane off [illegible] projection from clamping honey board. Add [illegible] so as to make it 3½" deeper

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1869 See 2 w (28)

Journal for—

Surplus—new plan to get most—(See May 27th 1868)

Super-annuated Queens— Do not the bees when they find a Queen growing old raise young ones? and do not these young ones then destroy the old one—? or does the old one perish very suddenly so that generally the young are not too far advanced to be changed into Queens after her death?
Careful experiments ought to be performed to ascertain the age to which the Queen lives—
Stands— By a little management position of hives may be changed gradually so as to suit the season of the year— I should prefer to have my hives S. W. by March or April— to continue until Fall when by little & little I could have them all E.— If hives are properly protected—perhaps S. E.— best for summer—

Sea Flowers—might prove a good crop for bees—

Sulphur fumes will destroy the worms in comb— when comb is to be taken and kept from bees it ought to be most thoroughly ~~fumed~~ sulphured— If this is done a second time it may be kept safely in a place where the moth cannot have access to it— A tight shutting box with arrangements for suspending the frames and for sulphuring—would be good—

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Apl 26. 1868

Surplus Hon. Boxes— Run all corners with melted mixture— Have the entrance hole same size and fashion with those in honey board— when bees are out— run the mixture over the top— and bees will not leak out!!

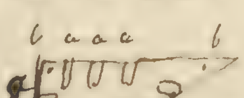
Front of top cover (and back) 7/8" less than 3 1/2" at top— get rabbets on outside strip nailed on or in [illegible] my look— Towards rear of cover have two grooves to slip down 1/2 inch slats kept apart by nails as in hive with close fitting tops of frames— to rest back part of frames on— (over grooves of) & stiffen box by corner (ends of hoop iron or tin). Each of the frames which run from front to rear will be room for ten shorter frames running from side to side—
In ten frame hive use ~~only~~ ten frames alone or eleven— if you want to give honey for bees below—
Upper cover thus fixed will hold about 90 lbs of honey— Hive with 13 frames will hold about 115 lbs in upper box— and about 25 lbs more than the ten frame hive in the [illegible]— say 5 lbs more than smaller
In this way all my hives can be altered from the present contracted form for surplus honey to one of greater size and at very small expense— If preferred the same arrangement will accommodate a double tier of boxes— the boxes being about 4 1/2" high— these boxes may be in sections— Or the [illegible] plan may be used— long wide frames running from front to rear— with four small ones in each— with comb guides between— See Je—

Trap — Feb.° 14th 1852 — To day have contrived my trap with small tacks to give it elevation — Combined ventilating Moth. Worm and Drone Trap — 1st. Cleans the hive and yet gives the bees air — 2 — Regulates the entrance — (3) Moth — Drone — Worm trap —

May 1st 1852 — Trap will catch and thus save bags and waste — with a pan and brush let this be collected — every few days — pour boiling water over it — Let something be put to catch the same from ventilators — it will pay for all trouble — No one that has not caught it will imagine how much —

July 2nd 1852 —
Transferring — colonies from old box to my hive — Drive colony into an empty box — cut out their hoard — and if you please empty comb and honey — fasten in frames with small wire — then shake out bees to ascend into the hive — with but very little loss may be transferred in this way —

Trap — Nov. 6th 1852 —



a, a, a are holes made with a gouge for the worms to spin in — those on the triangular edge are made larger so as to admit the millers — the b, b, b, b — are small tacks on the corners which raise the trap about 1/16 of an inch so as to allow the air of the hive to pass under it and the space is a nidus for the eggs of the miller — this ventilates the hive — and when no ventilation needed, tacks may be removed —

1st — Moth Excluder. 2nd — Trap for the eggs of the Moth — 3rd — Worm catcher —
4th — ~~Entrance~~ Protection against Robbing Bees — 5th — Entrance regulator. 6th —
~~Refuse wax gather saver~~ — Ventilator — 7th Refuse wax preserver 8th Drone catcher —
9th — Entrance closer —

To catch drones — Contract the entrance at the time that the drones are out in the greatest numbers — prop up the trap so that the drones can huddle under it — press it upon them (removing props) so as to kill them —

Taming Bees. Mr Della Rocca — bees in Paris tamer — the more they are accustomed to man — handled, if carefully — Sudden admission of light from above particularly alarms rather than enrages — withdrawal of comb from the hive above all other things quiets — feel that they are to lose it — fill themselves — must be no jar — Huber hive not withdrawing comb — does not answer as well — as jarring tends to loosen comb they have an instinctive aversion to it —

Transferring — June 11th 1852 — I may yet have to come to the plan of having two Apiaries at a distance in order to multiply stocks to the best advantage — but if my nucleus plan will answer I can avoid this — Suppose the nucleus let alone until their Queen is impregnated? Say I had 100 stocks and wished to make 50 new ones — Have 50 nuclei in the new hives —

Nov. 9th 1852 —
Trap — Cover — By making the front part of the lower part of the outside case of two inch stuff — 1st a place is made for the traps to slide under so that they are kept in place and not liable to be displaced by the wind — 2nd a protection is gained to keep rain from penetrating the hive — when hive inclined backwards for feeding — 3rd — a rest for the cover when elevated so as to give a view of the hive — all the advantage of hinges given — and yet none of their disadvantages — this projecting front of some and the traps should be painted a different color from the rest — so that when hives stand near — some have their fronts yellow some green — some red and some white — in this way the bees will not be near so likely to lose their young Queen — or let all the stocks only be painted — and put little strips on to such hives as have young Queens which must leave to meet drones. The only color suitable for a hive — is a snow white

T N/ For narrow or sharp edge rabbets for frames &c See Vol. 2 Ra—

Tea — A tea made by pouring boiling water upon bees is said to be a remedy for strangury — this is recent — old writers (vide Collin's Ms. bee book) speak of something similar as a cure for stoppages — in man and beast — May it not be owing to the effect of the poison of the bee? It is worth inquiry into —

Surplus Honey arrangements — To accommodate long sectional surplus honey frames, the tacks from Ba — Dec 1, 1855 — If the top cover as I still now use it thus arranged the Surplus Honey Receiver (or 2nd story) should be 7/8" shut with strips nailed on for rabbet — In all cases this should be done so as to form a suitable handle for lifting the Surplus Honey Receiver — It seems to me that this plan meets all the required conditions — and dispenses with the plan of extending Honey Receiver (2nd story) over the whole hive — It is cheap — simple — answers for large or small hives, frames on 2nd drum floor (See 2nd) the top rabbet strips will show the top corners of 2nd story — Some plan needed to prevent high winds from lifting off roof of hive — To prevent crushing bees right and left sides of 2nd story must be bevelled to 1/8 edge — so as not to split off — Front & rear rabbet strips should be kept below level 5/16ths and have nailed to their inner side 1/8" strips of hard wood or hoop iron for roof to rest on without crushing bees — It may be that narrow support for frames to rest on and for front and rear of roof may be got by bevelling — if so much better — To get small edge for frames and honey boards — rabbet 1/8" thick by 1/2" deep on inside upper part of the front and rear rabbet strips — this will let the 1/8" strips of hard wood and wire with tin nails hold them perfectly fast — The narrow edge for top cover may be nailed on the outside of the rabbet strips and outside of sides of hive — to project 1/8" beyond surface — or better still may be set in a 1/8" thick and 1/2" deep rabbets — this will make all strong and neat and yet be cheap — To keep roof from slipping forward to crush bees between caps and back of 2nd story — let two nails be driven into clout of roof ~~cover~~ front far enough to hold it off 1/4" — Two wooden wedges hung with wire or waxed twine one on front corner (side) of 2nd story the other on the back corner (not opposite) will hold all fast with least trouble or expense — have 1/4" of nails on back of 2nd story — Some nails to go into cover into sides of hive like dowel pins will probably be best —

See 20th Plan to fix upper cover over frames so as not to require frame of varying edges — Let sides of 2nd story be shorter — nail below on them the cover pieces of same thickness as ends of hive — ends of cover not coming down or going up as far as sides — cut out on cover strips of cover enough to let them rest on front & back end both edge — and clear by about 1/4 inch [illegible] instead of rabbets let [illegible] 1/2" hard wood strips — Have ends of 2nd story cover [illegible] sides [illegible]

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Nat. Theology =

July 18th 1852 = If connection had been in the hive a very few drones would have answered all the purpose - difficulty = apparent want of wisdom - and yet how many things to show the purpose by the Divine Being of infinite wisdom - same kind of difficulty in morals &c

In the early ages but little known of the physiology of the Bee - then honey the only natural sweet - now less important - but an additional interest now from the wonders known about the bees =

Nov 12th 1852 - If wax was a good conductor of heat it would be more difficult to mould it - it would absorb heat and moisture more readily - and would be more difficult to be kept warm by the bees

Nov. 15th 1852 - Bees when they swarm come off loaded - they are peaceable when loaded - if it were not for this they could not be domesticated

Nov. 16th 1852 - Queen Bee indisposed to sting any but a rival - her single sting would answer no valuable end in the defence of a colony while it would destroy her life and ruin the whole family -

Comb - Heat, demonstrated by analysis - heat required to work comb in heat generated by the change of honey into wax - Nonconductor - ~~[illegible]~~

Mathematical Construction of Comb -

Instinct - If we call all the wonderful operations of the bee mere blind instinct - then must we attribute all these things directly to the divine mind - viewed as we will all must at last be referred to God -

Wasps, hornets &c live solitary in winter - bees in large population -

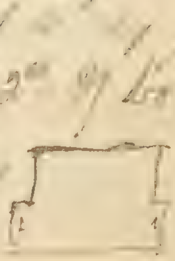
Consequences of that law by which bees, wasps &c are indisposed to sting away from home.

Ventilation - a most admirable arrangement - } Faeces - wisdom of arrangement -

Different cappings of honey and brood combs }

Feb. 2. 1858] Law controlling the increase of a colony -

If the bottom strips are spaced so as to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] this happens [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to 2nd story - If [illegible] [illegible] wanted for [illegible] [illegible] [illegible] partition off [illegible] [illegible] [illegible] [illegible] [illegible] strip [illegible] [illegible] to [illegible] [illegible] [illegible] - this partition [illegible] be let in - and this [illegible] [illegible] [illegible] of [illegible] [illegible] size [illegible] - if preferred [illegible] [illegible] [illegible] be [illegible] [illegible] [illegible] [illegible] 22nd If bottom strips are substituted to [illegible] honey boards - then side pieces must be cut thus



[illegible] to [illegible] [illegible] [illegible] the thin part of bottom strips to - To prevent water [illegible] [illegible] [illegible] those bottom strips they should be bevelled up to a good [illegible] If [illegible] of 2nd story made of [illegible] [illegible] [illegible] [illegible]

See [illegible]

Time — is money — to man — it is honey to bees — As the storing of surplus honey is done in about two months or less — not a single unnecessary step or motion sh'd be imposed upon a single bee — This sh'd be an axiom with the bee-master and sh'd be kept in mind in the construction of every part of the hive and in the whole management of the Apiary — He who has populous stocks at the time when the honey harvest is gathered; in hives where they can labor to the utmost advantage, with judicious management will be sure to succeed — The great difficulty with most of the patent hives is the large amount of extra labor wh. they demand of the bees compared with the old fashioned box or straw-hive. In every part of my hive I have made it a study in every part of my hive to save the time of the bees — and it will be found that the bees in this hive can store their honey and fill their boxes in even a shorter time than they cd do the same amount of work in the common box — this is owing to the great regularity of the combs — wh. always favors rapid work — and the extraordinary facility with wh. the bees pass to the boxes &c — Bees during the working season sh'd be regularly supplied with hot water — a few minutes a week will supply a large Apiary — and will repay the trouble ten-fold —

[illegible] end of hive no [illegible] and [illegible] — or two 7/8" [illegible] — This would allow 7/8" bottom strips to rest on 7/8" [illegible] strips — and ledges [illegible] make the [illegible] 2nd story [illegible] — [illegible] — Weight might be [illegible] by making sides of 2nd story [illegible] 1/2" thick instead of 7/8" — and as the ends [illegible] come inside the sides might be [illegible] to the 1st [illegible] — 7/8" full sides would make a better job — as 1/2" wd not allow rabbet and bottom strips to [illegible] [illegible] 2nd story [illegible] Some may prefer to make 2nd story so as to have no [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] 2nd story [illegible] [illegible] can be [illegible] story [illegible] — [illegible] It is [illegible] an advantage [illegible] to lift 2nd story — which might be made in [illegible] [illegible] strips [illegible] — [illegible] needed [illegible] 1st story ~~[illegible]~~ [illegible] 2nd story [illegible] rest on ledges might have the 1/8" hard wood strips — but as ~~these~~ 2nd story need not often be lifted of little need of this — better use shoe pegs in corners to prevent crushing — danger of breaking off the hard wood strips [illegible] — [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] — This [illegible] [illegible] — ~~[illegible]~~ [illegible] hive 7/8 wide and 7/8" ~~[illegible]~~ of top of frame — [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] —

Triangular Hive — Langstroth's Style of — (June 15 1868) See —

Time — it is a great mistake to suppose that the management of bees requires a great amount of time — It is true that in the swarming season a large apiary ~~requires~~ needs much attention — and that the bee master should keep a watchful eye upon his bees — Still the time necessarily required to manage to the best advantage fifty colonies will not if averaged through every day of the year amount to the time demanded of a farmer to take care of a single cow — or of a few dozen fowls — while the profit will be vastly greater. It will however be in short as foolish for a person to expect to make large profit from the labor of the bee without any care and attention on his part — as it would be to expect large profits from a flock of cattle similarly neglected. If bees are managed on the system recommended in this treatise the Apiarian may select the time when he has most leisure — say a dull day — for the formation of his artificial swarms — and may prevent himself in various ways from being so much hurried in the swarming season — If his great object is the rapid multiplication of his colonies a larger demand of course will be made upon his time — I strongly recommend, however, to all who cannot find a ready sale at good prices for all their swarms they are willing to spare, or who do not intend to make the keeping of bees a business on a large scale, a more slow multiplication of colonies — They will find this a safer system of management, one that will demand less time, and will yield the largest supplies of honey —

If rabbets for frames are 7/8" and frames 3/8" thick on top — and 1/8" strips are 1/2" above rabbets — and 1 1/2" above [illegible] kept out sides of hive it will answer — leaving in before the [illegible] chamber 5/16" strips — If rabbet strips are nailed [illegible] at inside sides of hive [illegible] may be 1 1/2" [illegible] — Jan 5. 1866 [illegible] — See Vol 2nd Ra — for much better plan —

3 Lea Ni — 19th — 54°. 92° — Ath very cold — raw — cloudy not a bee moving — [illegible]
in P.M. — bees came out very active — Saw another royal cell closed up
after queen had hatched — Noticed not only but [illegible] have built drone comb [illegible] that it is of a
very coarse kind — very thick — which [illegible] — they are evidently reluctant to build at all — [illegible]
many of my queens are laying with black drones — Queen of a nucleus that drone [illegible] any the day
~~May 26th 1861~~ — before was laying freely to day — (20th) 42° — Beautiful day for honey —
~~[illegible]~~ — A ~~hive with~~ queen which had [illegible] young queen building drone
comb out of a very thick coarse pattern — a waste of wax — gave a nucleus [illegible] 7. 2

(1) ~~[illegible] an Italian Queen of last year impregnated by common drone — [illegible]
very good — many bees and much brood [illegible] taken from it — (27) [illegible]
[illegible] — but [illegible] (June 18th) [illegible] — queen [illegible]
[illegible] queen [illegible] 9. C. [illegible]
[illegible]~~ — July 1st — [illegible] 2, with imperfect wings — replaced with 7. 9. 2 —
a [illegible] two sealed cells — [illegible] before [illegible] the queen or [illegible] they [illegible]
swarm — When honey is so plenty find it a good plan to have a special place to
set [illegible] which [illegible] — as [illegible] are quickly
[illegible] — at [illegible] which [illegible] combs [illegible]
that the [illegible] have a tendency to [illegible] combs [illegible] — [illegible] to

(2) ~~[illegible] 2 of last year [illegible] queen — [illegible]
[illegible] 7. 2 was impregnated by black drone — [illegible] has been taken [illegible]
[illegible] — (29) [illegible]~~ the bees from [illegible] the combs [illegible] the [illegible]
[illegible] in some places — and yet [illegible] as the old [illegible]
[illegible] pleased with these [illegible] — [illegible] many queens
[illegible] with common drones — (21st) 50° — Beautiful day — great for honey — [illegible]
[illegible] very large swarm [illegible] — [illegible]
[illegible] in it — A new [illegible] — [illegible]
[illegible] — queen [illegible] — [illegible] — [illegible] finished [illegible]
[illegible] — [illegible] in good condition — [illegible]

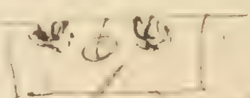
(3) ~~[illegible] 2, of last year [illegible] No 2 a 3 — was impregnated by common [illegible]
[illegible] yellow — [illegible] good — not [illegible]
[illegible] — [illegible] taken from~~
[illegible] a good yield — [illegible] make no more new swarms — (22) Rain in [illegible]
[illegible] a wonderful one for honey — (23) Rain very heavy [illegible] and [illegible]
[illegible] — [illegible] off [illegible] — at [illegible] which [illegible]
[illegible] worker cells — [illegible] — queen was laying eggs — [illegible]
[illegible] queen [illegible] to [illegible] — [illegible]
at [illegible] — [illegible]
[illegible] — 24th [illegible] good for bees [illegible]
[illegible]

~~(4) Had it [illegible] queen removed — [illegible] from [illegible] — [illegible] to [illegible]~~ T 12 [illegible]
~~it [illegible] — [illegible] — [illegible] 2? Gave [illegible] 22 — 30th~~
~~A.m. — removed [illegible] queen and gave her a [illegible] queen (31st) [illegible]~~
~~it [illegible] — saw 22 —~~ In some swarm [illegible] to this day here of 3/4 [illegible]

Italian — upper story nearly full — Italians had a similar [illegible] large as I ever saw — Heard of a swarm [illegible] where large hive [illegible] but solid honey, [illegible] swarm had left — hives which have no swarmed [illegible] have not much room [illegible] — (25th)

54° — Good honey day — several nuclei swarmed out — Several swarms with 4 guides and full set — combs [illegible] for [illegible] — Many combs in the guides crossed — should very much prefer to use pieces of comb for guides — this makes all sure — (26th) Italian Swarm which had [illegible] yesterday — and to day swarmed out — [illegible] have swarmed yesterday and again to day — several nuclei swarmed out — good day for honey — A young queen [illegible] to a nucleus with sealed queen uninjured — [illegible]

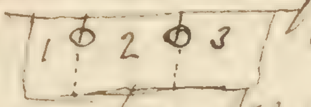
~~(5) [illegible] — [illegible] (29) [illegible] — (30th) [illegible] sealed [illegible] [illegible] 12 [illegible] [illegible] together they would [illegible] —~~
received here — (27th) 62° — Cloudy — sultry — good for honey — Careful examination of new swarms with [illegible] convinces me that it may very properly be called A [illegible] as well as a [illegible] — Thus far [illegible] in [illegible] the bees begin their combs each side of the [illegible] — [illegible] the



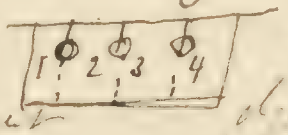
(6) ~~[illegible] (May 31) [illegible] — [illegible]~~
~~Queen [illegible] 2 [illegible] —~~ [illegible] (In a few instances a comb is started on the top before the [illegible] — the [illegible] seems to be [illegible] of the [illegible] — And when they begin their [illegible] combs they seem to make them meet in the center — Any [illegible] the bees from [illegible] their combs [illegible] and [illegible] to [illegible] short beyond them — it being their nature to make their combs extend from one side to another — (28th) [illegible] warm [illegible]
~~(7) [illegible]~~ 397
~~[illegible]~~ — Rain — heat — bees [illegible] — a large swarm from an old stock to which a young queen was given 3 weeks ago — no queen cells left behind! not a direction — a good swarm [illegible] left behind — A number of very beautiful (49) queens hatched — [illegible] — [illegible] me up — Found a number of bees upon [illegible] board gorged with [illegible] — could not fly — [illegible] they [illegible] young bees hurt by [illegible] of bee [illegible]

very heavy shower near sun-set — visited garden & much — (29th) Cloudy in A.M. — P.M. bees worked very well — (30th) Very hot — best work here — slight rain towards P.M. — A swarm with guides had very much crossed comb — unusual much here — [illegible] drawing many bees — were not able to trust to the guides frames — ought to be some guides comb in the frames — If one showing answers so well [illegible] the more [illegible]

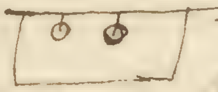
Tulip Tree — This is one of the most remarkable trees in the world for the production of honey — During the time that it is in blossom bees will scarcely resort to any other flowers — except for bee bread — The honey is dark in color but of good flavor — A good swarm coming out when this tree is in blossom — will in suitable weather almost fill their hive in 10 days or a fortnight — Its blossoms are sweeping —



or even three —



Effect the same is to divide the frame into three or four small ones — objection to (2) that it does not give a central [illegible] passage — three so many as to be in the way — then try a swarm with two — keeping them when central then —



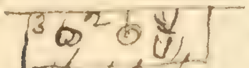
— If I can secure combs so straight as to dispense with guide frame a very great desideratum — If some ~~(3) [illegible]~~ trimming of bulging sides is needed — this early done — more than [illegible] and [illegible] — (1) they are not certain — 2nd — they discourage — (3) they cause [illegible] — (4th) [illegible] — Way not two showings and one central guide or at most two [illegible] — In a number of hives only 4 [illegible] eggs been allowed to come up [illegible] below — most of them refuse [illegible] — some [illegible] on the outside of boxes — others in the main comb! must be kept below — A queen gave [illegible] very bees in eggs [illegible] [illegible] — (July 1st) A.M. cool & cloudy — ~~(1) [illegible]~~ — swarm caught on a tree in the woods (had clustered twice before) and which had its queen removed at first swarming and [illegible] next day queen is left for [illegible] of the bees [illegible] comb, [illegible] left behind — guides in the hive — Removed guides from one [illegible] very much crossed — [illegible] from other combs very good — Saw the bees [illegible] — P.M. — [illegible] — A new swarm [illegible] very [illegible] all sealed — not [illegible] — [illegible] queen cells — queen must have failed ~~(10) [illegible]~~ gradually — [illegible] the [illegible] die — [illegible] queen — it [illegible] no guides [illegible] — think that the [illegible] trimming [illegible] perfect comb — (2nd) Clear — hot — bees did not work so well in A.M. — A fine swarm — Saw at 3 P.M. — 4 queens with signs of impatience [illegible] at least [illegible] only a few hours over 2½ days old — day very bright, warm & calm — Saw bees trying to remove part of [illegible] — Saw some [illegible] unable to fly — Bees that have filled second story unwilling to work in [illegible]

Hay should be removed ~~and~~ a third story given — Tulip yesterday [illegible] in white clover — Linden not in bloom yet — quite late — (3rd) Very hot — bees work well — In the double glass when first a hive of 3rd story all open scarcely a bee goes in or out — bees slow no [illegible] — many of them gorged — Examined ~~the late~~ a swarm put in yesterday with four leaf [illegible] swarms and half one — think that the two will have a [illegible] that [illegible]

T

Tumblers — In the warmest weather the conducting power of the glass will make them comfortable to the bees — If small ones in cool weather are covered over with the larger one — the space of air between will retain warmth — and aid the bees in comb-building — use small ones early and late in the season — larger size when the weather is hot and honey gathering at its height. Shape of cells in tumblers such as to discourage the Queen from laying eggs in them — Old writers used ~~them~~ glass a great deal —

Jan.y 30th 1852 — Instead of tumblers small earthen receptacles like flower pots can be used — (1) they are cheap — (2) not so good conductors of heat as glass — (3) ~~better~~ not so smooth as glass and better suited for the bees to travel up and down and to attach their comb — A small hole may be made in the side and a ledge left to receive a piece of glass so as to ascertain when they are filled — cheaper much than glass or wooden boxes — These pots would form most excellent covers for the tumblers in cool weather [illegible] to go straight —



Highest comb at (1) but very [illegible] and [illegible] — I think that by [illegible] they [illegible] them in three places — 2, and 3 — I think that the swarming does not work so well with the [illegible] tends to make the combs crooked which can be [illegible] by guide combs — [illegible] very [illegible] to day — ~~(4) [illegible]~~ July 4th Hot very — [illegible] bees very busy — Noticed that in hot weather with two or three stories the bees fly only at one and ventilate only at one — many gorged at the other entrance very still — Doubt whether the two stories are at all necessary — Examined a hive without [illegible] of bees and comb — all perfectly straight — The [illegible] very [illegible] be cut off and the comb [illegible] if necessary — The (10th) [illegible] June 11th from the [illegible] — [illegible] perfectly [illegible] [illegible] more than when [illegible] comb — Examined [illegible] swarm [illegible] — going very well — [illegible] beginning to [illegible] the [illegible] with guide [illegible] — if so [illegible] of the greatest [illegible] — Examined [illegible] from [illegible] whose queen had only [illegible] more than 48 hours [illegible] — plenty of bees and [illegible] no eggs laid yet — (5th) Very hot, dry, clear — [illegible] — found 5 queens with queens [illegible] marks of impregnation — just 3 days ago — have plenty of [illegible] honey [illegible] brood – no eggs – queen visibly larger – These queens were impregnated when only four days old – Saw a queen flying some minutes before her having before [illegible] returned – only 60 hours old – examined her but saw no signs of impregnation – yet bees [illegible] around her as [illegible] though she might be [illegible] – Some of my queens [illegible] their excrement and lay eggs after [illegible] them visible – Set out an Italian queen [illegible] left three days [illegible] the bees [illegible] her in time – [illegible] one of her [illegible] – Had a good swarm

(13th) ~~[illegible] Queen 12 [illegible] old queen~~ after 6 P.M. – Heard a few days ago two queens swarm – some quarrelling – bees have made only a few small combs – pulled one out into [illegible] – driven in [illegible] keep coming out – Drove them in to keep in black drones – this P.M. – all out in [illegible] – opened – a great [illegible] – about half a pint of dead bees – all in one corner – bees could not get them out – [illegible] forced them out removed them – and bees have gone in well – have a good queen – (July 6th) Very hot 97° – One heavy comb in second story loosened and fell down – clasped [illegible] [illegible] [illegible] – Queen seen out yesterday impregnated to day – Found ~~[illegible]~~ eggs in four of the [illegible] [illegible]

~~(14th) [illegible] Queen 13th [illegible]~~ yesterday P.M. – [illegible] the [illegible] – one not [illegible] P.M. – [illegible] one three days before they laid – one four – Most of my queens seem to be [illegible] can account for this only on the supposition of [illegible] [illegible] – (7th) Took away a fertile queen from a nucleus for about half an hour – returned her – in an hour after found her imprisoned by her bees – had put her in a cage in which a short time before (in [illegible]) other queens had been kept – I took them from nuclei to fasten comb for [illegible] [illegible] – after removing a fertile queen from a nucleus gave a queen cell from which [illegible] [illegible] – she was not disturbed – Saw after sun set [illegible] drones collected

(15) ~~[illegible] Queen 13th [illegible]~~ – [illegible] no queen – [illegible] Gave a black queen – together on a [illegible] of a hive – This [illegible] and it is a [illegible] to look out to [illegible] [illegible] – (8th) Very hot – but fresh breeze – drones [illegible] [illegible] – a slight one here – bees [illegible] well – yesterday saw the [illegible] of drone 24 hours after queen was impregnated – Examined comb where queen was [illegible] [illegible] five days no eggs – A small nucleus with [illegible] queen cell confined a young queen [illegible] – [illegible] two queens had [illegible] one [illegible] on the bottom of hive – Three drones

~~(16) Queen 20th from [illegible] Old [illegible] Swarm~~ are being expelled to day – Find that the plan of letting the boxes on the 2nd story does not work well – bees do not incline to enter them – (9th) Very hot – Found another comb in upper story partly fallen from heat – straw or [illegible] [illegible] to be put on top of hives [illegible] [illegible] hot weather – Found an Italian killing a number of bees – all were [illegible] drones with ragged wings – [illegible] [illegible] – The stock had a comb melted and honey [illegible] [illegible] the [illegible] that got a taste of it; An Italian [illegible] honey [illegible] [illegible] – Saw a few [illegible] [illegible] in my [illegible] [illegible] – [illegible] think the [illegible] bees [illegible] [illegible] this year a [illegible] honey –

A00

hive loto it in the comb— Two years ago produced nothing— Three years ago was so abundant that lots many did [illegible]— Think it inclines to yield every other year— [illegible] [illegible] abundant [illegible] bees getting [illegible] [illegible] honey— the [illegible] [illegible] [illegible] [illegible] [illegible]— Rain this P.M. with thunder— Enough may prolong the [illegible] some— Here to day 91 stocks from 61 and much surplus honey— Queens from [illegible] have the one

(Isaiah 10. 5–12)

~~Unregenerate men. May be Gods servants~~ & rewarded by him (Daniel Clarke's Sermons P. 174)

again not so well [illegible]— (10th) Very heavy rain last night and also this a.m.— [illegible] drain discharging [illegible] [illegible]— wind East— Cool— Two queens born [illegible] the 3rd laying eggs to day— Saw one with eggs of [illegible] on the 5th— She had [illegible] eggs [illegible] this [illegible]— was laying at noon— this [illegible] [illegible] then began on the fourth day— (11th) [illegible]— [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] bees again [illegible] fairly [illegible] [illegible]— [illegible] queen of a nucleus which has [illegible] her [illegible]— a [illegible] of bees on [illegible] on the outside of every hive— [illegible] [illegible] [illegible] that the [illegible] [illegible]— Got bees out of a [illegible] box by setting it near a [illegible] [illegible] the [illegible] the [illegible] they [illegible] rapidly— (12th) 54°— [illegible] [illegible] [illegible]— [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of bees [illegible] [illegible] [illegible] [illegible]— [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]— [illegible] [illegible]

(48) to getting [illegible] of [illegible] [illegible] 47— [illegible] [illegible] [illegible] [illegible]—

Bees often [illegible] [illegible] queen [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]— [illegible] [illegible] must [illegible] [illegible] [illegible] and [illegible] [illegible] [illegible]— Hive with best queen [illegible] [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]— (13th) Hot— [illegible] [illegible]— Great amount of rain— (14th) Hot— bees [illegible] [illegible]— Removed [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]— [illegible] [illegible] [illegible] [illegible] [illegible] and [illegible] [illegible] by the bee [illegible]— (15th) [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]— [illegible] queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] by the bee [illegible]— [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of bees— Found two queens that could not get out— caps too much confined by wood of [illegible]— helped them out [illegible]. They appear well— Notice that the most brilliant queens are usually of good size and the very dark ones are usually small— When [illegible] are removed and unfinished cells put between [illegible] [illegible] [illegible] [illegible] cells are [illegible] to bulge out— Bees seem [illegible] [illegible] [illegible] more [illegible]— Very abundant rains must advance the growth of [illegible] [illegible]— (16th) Heavy rain and wind last night— hot day— notice that drones [illegible] [illegible] [illegible] [illegible] of [illegible] [illegible] are [illegible]— Removed 4 black queens— [illegible] [illegible] [illegible] [illegible] [illegible]

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queens – while with [illegible] I was not successful – Used bellows – bees very quiet – (17th) Rain again to day – Last night received two queens from Wm. W. Cary of Coleraine – One a choice [illegible] [illegible] [illegible] – [illegible] young Italian [illegible] [illegible] [illegible] [illegible] (29) [illegible] – A nucleus [illegible] [illegible] [illegible] plenty of young [illegible] (partly) [illegible]

Unitarianism, Causes of the introduction of into N. Eng (Sp. of Pil. vol. 2)

are out – Had with queens, and too few bees – more [illegible] (29) [illegible] – Gave the [illegible] to [illegible] – [illegible] eggs [illegible] to [illegible] [illegible] – [illegible] the [illegible] with success in [illegible] more black queens – Have put on the [illegible] the [illegible] (29) [illegible] queens [illegible] – they are well covered by the bees – Saw drone eggs in new comb of a black colony – The [illegible] – (18th) Very warm no rain to day! [illegible] young queen given this [illegible] – [illegible] found her [illegible] – put her in cage again – found a sealed queen cell – Found the [illegible] – [illegible] bees stung me in getting her away – put her in cage – does not seem [illegible] – [illegible] [illegible] – [illegible] them off – [illegible] honey gathered – (19th) Very hot – [illegible] larger yard! [illegible] [illegible] – [illegible] 3 days and 21 hours [illegible] to lay – [illegible] [illegible] – [illegible] heavy shower – (20th) [illegible] and [illegible] – (21st) A beautiful [illegible] – Colony deprived of black queen had queen cell given which failed – gave a fertile queen in cage for a few hours – let her out very well received – [illegible] of [illegible] black – Can [illegible] of [illegible] young [illegible] [illegible] this [illegible] (22nd) Hot – but pleasant breeze – Yesterday gave a colony to which a queen [illegible] in [illegible] (and kept in a nucleus) had been given a [illegible] comb with much drone cells – and fed them in the feeding [illegible] – to day I see that the queen has laid a number of drone eggs – [illegible] how readily a colony [illegible] sealed queen takes an Italian [illegible] – By this experiment – [illegible] queen [illegible] [illegible] – next day [illegible] – Confined [illegible] for [illegible] [illegible] – [illegible] [illegible]! [illegible] – after [illegible] in about five minutes and found bees caressing her! A queen cell opened [illegible] by [illegible] queen and given to another [illegible] was [illegible] and [illegible] – Very good sized and vigorous [illegible] a fertile worker – (23) A handsome Bean queen [illegible] [illegible] in old colonies and [illegible] and nuclei – [illegible]

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[illegible] — bees inclined to rob — Confine queen of tested weight — [illegible]
[illegible] [illegible] — [illegible] queen [illegible] — [illegible]
[illegible] query there [illegible] the chosen — (24th) Pleasant day — bees very [illegible] U
Removing [illegible] black queens — [illegible]
[illegible] — [illegible] when 48 hours — [illegible] 48 hours [illegible] — And the queen [illegible]
by the bees [illegible] [illegible] — [illegible]
[illegible]
[illegible] — [illegible]
[illegible] — [illegible] 8 days and 22 hours [illegible]
to lay — Two eggs in one on each side of comb — Saw a queen with [illegible]
full of drone eggs — [illegible]
[illegible]
[illegible] — [illegible]
or [illegible] sound made by a queen just before [illegible]
[illegible] — (25th) Cooler — [illegible]
queens [illegible] — All but one [illegible] — [illegible]
piping sound again just before a queen [illegible] — [illegible] four (4) days [illegible]
seen to go out at 2 P.M. — [illegible] — [illegible] queen [illegible] about four
hours before four days after [illegible] — Full colonies and nuclei are
very much crowded with bee bread — Removed a queen cell from [illegible]
[illegible]
[illegible] — [illegible]
of queen gave to a black [illegible] when let out of cage [illegible]
[illegible] — (26th) Pleasant — [illegible]
[illegible]
[illegible] — [illegible]
[illegible]
[illegible] — queen [illegible] — [illegible] in colony
fed [illegible] eggs — a comb with black [illegible]
[illegible] queen [illegible]
[illegible] by bees — [illegible]
[illegible]
which [illegible] — ~~then~~ [illegible]
[illegible] — (27th) Warm — [illegible] 403
[illegible] — (28th) Warm — 82° — [illegible]
[illegible]
[illegible] — [illegible] queen [illegible]
[illegible] day after [illegible] — [illegible]

[illegible] [illegible] [illegible] — [illegible] in [illegible] condition — the [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] after the hive [illegible] [illegible] [illegible] — A hive
U u
[illegible] [illegible] [illegible] [illegible] eggs laid — (29th) Warm pleasant — A queen in a cell [illegible]
[illegible] and body badly crushed in [illegible] — [illegible] [illegible] — A queen impregnated about
2 1/2 P.M. — first laying at 8 1/2 o'clock of the 4th day — [illegible] only [illegible] [illegible] eggs —
[illegible] [illegible] [illegible] [illegible] in drone — apparently little — drones [illegible] [illegible] [illegible] full of honey —
saw bees feed some — A [illegible] [illegible] out [illegible] of the [illegible] [illegible] a few [illegible] —
Saw a queen [illegible] days old impregnated — 24th — [illegible] very large [illegible] [illegible] — in
[illegible] [illegible] the [illegible] of [illegible] [illegible] — Saw [illegible] [illegible] [illegible] that was impregnated —
[illegible] [illegible] queen from [illegible] (26) — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] of the [illegible] of the cell, [illegible] the cell crushed [illegible] [illegible] [illegible]
it [illegible] — The [illegible] [illegible] [illegible] [illegible] [illegible] of the honey [illegible] [illegible] [illegible] the [illegible]
[illegible] [illegible] [illegible] bee — just hatched [illegible] [illegible] [illegible] smaller the queen [illegible]
[illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — (30th) Very hot — At 3 1/2
P.M. — found a very beautiful queen with large [illegible] [illegible] — Caught her — she [illegible]
[illegible] [illegible] [illegible] [illegible] — in a few minutes ~~saw~~ [illegible] [illegible] in the [illegible] — the [illegible]
[illegible] [illegible] [illegible]! — Two queen cells [illegible] off — had [illegible] about [illegible] [illegible]
[illegible] — could find neither! put a comb with queen cell and bees into a
nucleus box set on ground near hive — soon saw [illegible] [illegible] [illegible]
up the side! Put her into a nucleus box with bees — in an hour [illegible]
[illegible] [illegible] the other queen in the [illegible]! This last nucleus [illegible] [illegible] [illegible]
on the [illegible] [illegible] of the [illegible] — the two queens had left the hive soon after
[illegible] — Found a queen [illegible] in a nucleus — [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] off the lid of the cell [illegible] [illegible] [illegible] — [illegible] the number
of [illegible] [illegible] [illegible] [illegible] [illegible] days [illegible] [illegible] [illegible] [illegible] [illegible]
queen [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] — [illegible]
[illegible] [illegible] [illegible] of honey — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] — [illegible] [illegible] honey in the [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] the [illegible] —
(31st) Hot — Received 12 [illegible] from [illegible] — [illegible] to [illegible] 12 [illegible]
queen [illegible] [illegible] [illegible] and combs — the [illegible] [illegible] — G. queen [illegible] to lay
in [illegible] [illegible] of [illegible] comb — [illegible] [illegible] [illegible] [illegible] one — new — Shall [illegible]
[illegible] the [illegible] of queens in strong nuclei — (August 1st) Hot — pleasant [illegible]
[illegible] [illegible] [illegible] hatch on the 7th day after [illegible] — A swarm settled on a
tree — [illegible] not [illegible] [illegible] [illegible] — queen [illegible] — [illegible] [illegible] [illegible] — [illegible] [illegible]
and two queens — [illegible] the [illegible] one — saw but a few [illegible] in the swarm — most of
the [illegible] [illegible] [illegible] [illegible] [illegible]! [illegible] [illegible] that [illegible] [illegible] [illegible] [illegible]

to the swarm — Caught a drone — organ popped out with a decided report like a small pop gun — appearance very different from the organ as [illegible] when there is pressure — beyond the penis a small ~~white~~ truncated [illegible] bladder — [illegible] [illegible] of [illegible] [illegible] the same white mass seen in [illegible] [illegible] when the [illegible] [illegible] [illegible] — at the end of this and [illegible] under it two horn like appendages as though to hold fast — it is [illegible] to see how readily the white mass [illegible] from the [illegible] — Have [illegible] the [illegible] in diluted alcohol to have a [illegible] examination — Just before dark I scooped up with a bowl outlying bees and poured them out before the nucleus [illegible] [illegible] together they went in quietly — (2nd) Hot — [illegible] with first fertile queen [illegible] out — queen lost — [illegible] [illegible] [illegible] "at it" in the same [illegible] way — (3rd) Hot — another nucleus with fertile queen gone — the queen [illegible] laid many eggs — judge that she [illegible] — (4th) [illegible] [illegible] [illegible] [illegible] [illegible] with [illegible] [illegible] (5th) [illegible] beautiful queen [illegible] [illegible] [illegible] nucleus [illegible] queen killed! Another queen [illegible] within [illegible] hours of the 16th day [illegible] — [illegible] [illegible] sealed queen has been given in place of [illegible] [illegible] — [illegible] [illegible] [illegible] eggs in a queen cell — [illegible] [illegible] left them — [illegible] [illegible] of the fertility of the queen — [illegible] that a fertile worker had laid the eggs in the cells — [illegible] [illegible] — [illegible] [illegible] queen had been [illegible] [illegible] [illegible] [illegible]! Eggs [illegible] [illegible] in upper cell [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] a young queen [illegible] [illegible] [illegible] had a [illegible] [illegible] last night [illegible] [illegible], [illegible] [illegible] [illegible] [illegible] — [illegible] again — Today [illegible] for [illegible] [illegible] [illegible] came — (6th) Cool weather — more rain last night — great cool weather — Had an extra queen from my Italian queen — [illegible] of my (49) queen as I do not want more queens from her in my apiary — Have had some very beautiful queens from her — but too many poor ones — A queen did not lay till [illegible] nearly five days [illegible] [illegible] — [illegible] [illegible] "at once" (7th) [illegible] hot — Have put a queen upon the nucleus with my Italian queen — [illegible] queen in the nucleus [illegible] [illegible] to lay drone eggs — Had a [illegible] [illegible] [illegible] plenty of [illegible] — bees have up to this time got their living I think — [illegible] [illegible] [illegible] — (8th) [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] comb [illegible] — [illegible] [illegible] [illegible] of drone brood — A queen two weeks old [illegible] [illegible] to lay — [illegible] — (9th) Hot — beautiful shower — A beautiful fertile queen [illegible] from a nucleus — has laid [illegible] [illegible] [illegible] all her eggs — [illegible] [illegible] [illegible] when they [illegible] out — Another very beautiful one — A fertile queen confined over 48 hours attacked by bees [illegible] upon her — A queen that [illegible] [illegible] [illegible] [illegible] [illegible] queen — [illegible] [illegible] [illegible] cell [illegible] [illegible]

3 [illegible]

Ventilation for human beings - See P. 150

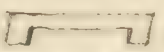
Ventilation. If bees have only a very small entrance they are able by the rapid fanning of their wings to keep the air of their hives pure - In very hot weather a large number may be seen stationed in front of the entrance engaged in this laborious occupation - Much valuable time in the very height of the gathering season is thus lost to the colony - If the entrance is too large - danger from moth, robbers - too much air in cold weather - often kills the brood - Ventil° ought to be furnished independently of the entrance - and should be under the perfect control of the Apiarian - ~~Those~~ who should watch his bees over the spring and until the weather becomes settled warm, just as the gardener watches his hot beds - When they need more ventil° - they will show it by the increase of ventilators at the entrance - so long as few or none are fanning there no more air needed - He who cannot or will not take the trouble in the spring to open and shut the ventilators according to circumstances had better make no use of them at all - but manage in the old-fashioned way - give the bees small entrances and then entrust the whole matter to them - It will be seen from my remarks that I am opposed to recommending improved systems of management to those who are too negligent to make any improvements - Nothing is more injurious to bees than a close, pent heat - such as is caused by the sun beating down upon their hives - with little or no ventil° - the bees are often compelled to leave such hives from the danger of suffocating or of having their combs melt - They will stand the severest heat of the hottest climates if they are not exposed to the direct rays of the sun - Confined Garrets are poor places for these lovers of fresh air - L.

Feb. 9 1850 -

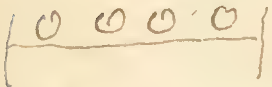
Ventilation of hive - } Make bottom board - leave some of the holes in it open - (in very hot weather) - open, between the boxes, open -

Vent. air - Feb 9th 1850 - Slip for - the lower back ventilator should be bevelled to an edge - so as to go in easy - and to regulate admission of air - the thin edge goes in first - two nails ~~to~~ as handles - the back of it -

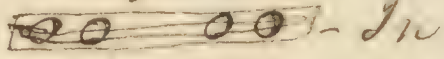
= ab - the side that goes in - ab the thin edge -

See opposite page | a piece of tin or zinc goes  - shows way to pass bees shows way to shut them in - By such an arrangement complete control of entrance got with next to no trouble or expense - Blocks no longer need be used - Am much pleased with this Ventilator -

Ventilation Let the Bottom Board be set upon an open box without top or bottom — This may be set up on stones, bricks &c and then banked up all around with earth or tan-bark. The air of the hive in winter may be drawn up from this and be warm — in summer it will be cool — In Spring it should not be allowed to enter much —

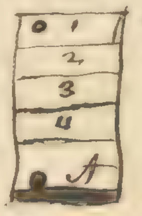


The ventilators are made under the covered entrance — near its outside edge — where their covers can be easily reached — they are covered with gauze wire — and then zinc — or perforated zinc or tin — which may be covered over when ventilation is not desired — This enables the bees to regulate the ventilation and avoids the evils of other plans — the entrance may be contracted or shut up — and yet the bees will have air — This places the bees in such a situation that they are not too hot in warm weather nor suffer to lose their heat from sudden chills —

Nov. 5th 1852 — The gauze wire which covers the ventilating holes may be slid in — so that at any time it may be easily removed — the holes ought to be thus —  — In this case gauze wire may be dispensed with — If a gutter is made as in figure it will keep water from running in — If hives are made to hold more combs — the ventilators coming at the ends will keep them cool if dividers separate them from the rest of the hive —

April 7. 1860)
Rear Ventilator — Let the bottom board of the hive project to the rear about one inch beyond back of the hive — this will give a good place for bees to alight — with other advantages — the sides may also project — about as much as the ledge on the rear side.

Oct 28th 1865
Front Ventilator and Entrance Regulator — Let there be a front ventilator — hung blind fashion on a pivot on the same principle as the rear (Cobb) ventilator — It might have a central entrance cut 3" x 3/8" — Let there be 4 steps of wood — 2" wide — with depressions cut edge height of steps 1/3" ~~long~~ long — first step 1/8" scant thick — 2nd step 5/32" — 3rd step 6/32" strong — 4th step 1/4" — To confine the bees yet give them air — shut down front and back ventilator on 1st step — To confine queen and exclude stray queens shut down on 2d step — To include or exclude drones — shut down on 3rd step — To give free passage shut down on 4th step — To give freest ventilation — stand these entrance regulators on end and shut down ventilators on them — Have two holes in them to hang them up when not in use against heads or pins on side of portico — It A have a ledge to draw them out if gummed by bees — they might be cast iron or cast galvanized — To regulate the entrance in front ventilator — have a slot cut in it into which See 7-a —



Ventilation of the Hive. A hive should be so constructed as to secure a perfect control of ventilation. In the Winter and in the Summer it will be necessary to admit the largest amount of fresh air — In the Winter to prevent the comb from moulding and to keep the hive dry — If a hive is properly constructed a good swarm of bees will not suffer in the coldest weather by a sufficiently free admission of air to prevent mould. So many swarms are ruined by being kept too closely shut in cold weather. At this time they have no brood to be injured by a chill — As soon as the weather is sufficiently warm for them to commence breeding the air should be admitted more sparingly. Sudden changes of weather when too much air is admitted compel the bees to retire for warmth from the comb containing brood — the brood becomes diseased — dies and early swarming is prevented. In the warm weather when the hive is crowded a large amount of fresh air is necessary — if but a small entrance is given to the bees they will by powerful efforts at ventilation do all they can to supply themselves with fresh air — if they succeed a large amount of the hardest kind of work has been unnecessarily imposed upon them — and just so much taken from their production of honey — If all the air that they need in warm weather is admitted by the entrance

Of the thinner and colder hives in winter the greater will be the necessity for a free admission of air to dry up the evaporation and to prevent mould — but if the hive is well protected and there is a current passing off from above — a little air will suffice —!

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for the bees, the bees will be very liable to be attacked by robber bees and by the bee moth.— this bee moth will almost certainly get to the combs when the number of the bees is too much diminished by swarming to cover them— the only safe mode of admitting air so as to be able to control it at all times is by gauze wire with covering slides. This makes the Apiarian to contract the entrance to his hive so that the bees may easily defend it, to shut up the entrance whenever it is desirable, and to control the ventilation according to circumstances.

ventilaᵒ from above— If there is a small opening in the top of the hive in winter— it will allow the vapor to pass off— and keep the bees dry—

Hives buried— The fact that hives may be buried in the winter shows that if bees are kept from the frost— and from sudden changes of temperature they can live with very little air— Thin hives not only admit the cold through their sides, top &c but in order to guard against mold require an unusual amount of air and cold and thus are doubly injurious to the bees— The fact that bees do exist and flourish with a very small admission of air— seems to be indisputable— they are it will seem almost dormant— this is the state in which we should aim to have them— as they eat but little and are most healthy—

(Feb 5. 1853) I am doubtful whether ventilation from above is of any advantage they do not get it often in a state of nature. Try some with others without— have a hole to keep open in the upper box in cold weather— then keep one or more holes in the tumbler board open— a priori I believe that a current of air will do harm rather than good: that the bees object to it is plain from their stopping up such ventilations.

(over—

(May 16th 1861

V

i

Rear Ventilator— If the drop Bottom Board is used then the rear ventilator is not needed— as filth can be got rid of without it— and air can be given to any desirable extent—

April 10th 1862—) If the efficacy of [illegible] is owing to [illegible] of [illegible] why may Nitrous[illegible] not [illegible] equally [illegible]!

August 16th 1862) Away for several days— slight rain day before yesterday— and [illegible] Dec (view) Now much cooler— [illegible] four days ago [illegible] laying is rather [illegible]! [illegible] new comb with eggs & [illegible] the black [illegible] have [illegible] a large number of queen cells— [illegible] plenty of [illegible] new comb— A young queen [illegible] comb— [illegible] queen [illegible] cells— [illegible] queen [illegible] and queen is laying more eggs in their cells— Expect now to have plenty of Italian drones [illegible] of my stocks [illegible] their drones— [illegible] — 17th [illegible] A swarm at 2 P.M.— an old stock from [illegible] queen— my queen had hatched— [illegible] the [illegible] cells— [illegible] Italian [illegible] the swarm while on the tree! [illegible] Italian drones [illegible] 180[illegible] a large drone comb in a [illegible] abundance of [illegible] Bees are gathering [illegible] two years ago— [illegible] it can be made [illegible] Had one in my hand [illegible] queen first came out [illegible] bow [illegible] ~~[illegible]~~ [illegible] from it— I believe that the [illegible] is [illegible] (b.2d) [illegible] chocolate color— [illegible] If the organ does not [illegible] does not open (I think) to let out semen— (19th) Warm— very dry— [illegible] Italian drones— [illegible] some buckwheat [illegible] about the hive— Gave two queen cells to nuclei from which the queens had just been taken [illegible] in a few hours [illegible] queens were [illegible] — The black stocks [illegible] getting rid of their drones— they are [illegible] now— I [illegible] the queen [illegible] Italian drones— A queen [illegible]

A10

young queen — opened it and found her very clearly [illegible] — (20th) Two young queens from the hatching age sent to Mr Otis — one too feeble — the other very beautiful — I have a queen cell in which I could hear the queen "queening" [illegible] — the bees off the covering) in the V (39)

gave to a [illegible] nucleus [illegible] after the [illegible] it [illegible] was — [illegible]

Question is it ever possible queen hatching — bees have placed it in the hive there two of them took the one just ready to crawl out — found a queen cell open cell with no queen — saw a worker cut the part of the cell [illegible] have been the queen. Saw a young queen very busy gnawing a hole into the side of the cell [illegible] large [illegible]! there was another queen cell [illegible] in the hive [illegible] her first did not seem to help her — she [illegible] too long to [illegible] when the [illegible] was [illegible] out — looked at it an hour or two after — had a hole in it

A hatched queen put in a cage — a hole made in the side of her cell — think it was done after she was put in cage and by the bees — A queen had made a small hole in her cell — opened and let her out — she was not so light as they usually are — Took away a queen from a nucleus — dipped a young, unfertile queen in honey [illegible] with out of [illegible] [illegible] her among them — in [illegible] hours [illegible] and there is great agitation and queen could not be found — took away queen cells from a nucleus gave them a young queen (unfertile?) dipped in honey [illegible] with [illegible] of [illegible] — in [illegible] that [illegible] [illegible] her crippled outside of the hive — (21st) In a nucleus out of honey with two queen cells — I found in the cell 7 one in the other 15 [illegible] of the [illegible] moth — most of them small but some half grown — [illegible] in — the queen dead and [illegible] [illegible] — yesterday a nucleus swarmed — (put [illegible] queen in cage) in a new [illegible] — swarmed out to day — queen left behind — did not go back but joined another nucleus — Two [illegible] nucleus which swarmed out, many drones [illegible] them [illegible] The [illegible] which swarmed on Sunday from [illegible] Italian bees [illegible] they joined the [illegible] and [illegible] with it after the queen was returned — (22) [illegible] showers (slight) yesterday [illegible] and this [illegible] — [illegible] [illegible] Otis (2) — [illegible] queen hatched last night and killed two others — found them just outside the [illegible] it being rainy — Had another [illegible] (4) — the last — one hatched next to her cage [illegible] I get more than equal to them I get in queens — the nuclei are well supplied with honey but the vigor of the season is gone — (23) Am satisfied that the Italian bees do gather much honey from the 2nd crop of red clover — the [illegible] [illegible] very [illegible] on the 2nd crop — [illegible] had nine (9) queens in cages on the frame of one hive — to [illegible] [illegible] — [illegible] been on several days — [illegible] them all dead but the queens [illegible] been fed by the bees! Think that one queen got down among the bees but [illegible] alone in a cage they die in a few hours — [illegible] whether [illegible] a fertile queen [illegible] take care of queens of this [illegible] [illegible] [illegible] [illegible] [illegible] — found a small nucleus [illegible] queen [illegible] a week [illegible] — the [illegible] [illegible] [illegible] — [illegible] [illegible] minutes – opened again – [illegible] [illegible] again was gone some 20 or [illegible] minutes – [illegible] when the [illegible] – had [illegible] of [illegible] on her – Kirtland hive has all just [illegible] off all its drones – Drones from the fed hive are on the wing and are very [illegible] – (24th) [illegible] – [illegible] – (25th) [illegible] day – Drones and Italian queen in the cage all [illegible] given to [illegible] stock of [illegible] [illegible] 25th – On

Voluntary Principle, objections to, (when applicable, and when not-) Table – (Spiritual Despotism. Section II.. P.41)

letting out a [illegible] from a fertile queen in the hive [illegible] from [illegible] left by [illegible] queen. Bees [illegible] [illegible], and [illegible] a queen when they have another, and a young queen [illegible] [illegible] to [illegible] the [illegible], [illegible] there is a caged queen in the hive! Thinking that a stock which has many (I think) a fertile queen [illegible] [illegible] many fertile [illegible] [illegible] queens [illegible] [illegible] [illegible] in cages at once) I to day gave to [illegible] stocks [illegible] [illegible] queen – queen in cages – [illegible] [illegible] [illegible] – [illegible] (are [illegible] [illegible] [illegible]) they are all [illegible] cared for – If this is a law it is one of great importance – When a queen becomes fertile [illegible] [illegible] she may be removed – and kept in a cage [illegible] – the [illegible] having a sealed queen [illegible] – and then another and another may be [illegible] – any [illegible] of queens at any time may be economized – when an old queen is [illegible] to be [illegible] – she may be kept [illegible] it is seen whether her successor is received – queens may be kept on hand for emergencies [illegible] – If the law prove to be [illegible] [illegible] a very great step in advance in queen rearing – for [illegible] I [illegible] [illegible] a number of queen cells [illegible] all my stocks have queens – I can remove the queens to cage them and substitute the [illegible] [illegible] an Italian queen of last year that was reared in a [illegible] stock – she is [illegible] [illegible] [illegible] reared in [illegible] – Bees very busy on red clover – [illegible] bees suppose to have been on red clover – [illegible] in bladder seems to have a [illegible] looking like ~~[illegible]~~ scum [illegible] [illegible] [illegible] [illegible] [illegible] – a [illegible] stock doing nothing – (26th) Hot and very dry – Found a large quantity of white jelly in a sealed cell in a nucleus – cap had been [illegible] [illegible] [illegible] out – does [illegible] eat any after cell is capped? Found a queen [illegible] with [illegible] [illegible] thread [illegible] [illegible] [illegible] [illegible] of yesterday [illegible] [illegible] queens have taken care of fertile and unfertile queen in cages since yesterday!! Some Kirtland drones [illegible] left – drones mostly killed off – (27th) Rain – [illegible] [illegible] – [illegible] on [illegible] [illegible] [illegible] queen [illegible] – in many places all [illegible] up – One unfertile queen given to a stock with fertile queen [illegible] in her cage – bees from the [illegible] did not [illegible] her – gave them [illegible] [illegible] [illegible] they [illegible] – It may be that a stock needs a little education to accustom it to take care of queens – the others [illegible] [illegible] [illegible] [illegible] [illegible] all right – 28th – Cooler [illegible] – Stock that killed the unfertile queen [illegible] another – gave them a fertile queen – [illegible] many bees on red clover – Stock with many drones [illegible] [illegible] a few drones [illegible] [illegible] their queen – She has [illegible] [illegible] a few more eggs in drone cells, where the drones have just [illegible] out – The stock has [illegible] in honey [illegible] [illegible] [illegible] [illegible] [illegible] queens [illegible] [illegible] days [illegible] – [illegible] [illegible] queen [illegible] the nucleus [illegible] this [illegible] –

[illegible] drones & their being persecuted — (29th) [illegible] noticed a few drones from my colony with late drones molested — At [illegible] to day the [illegible] were busy driving them out — most of them just hatched and could offer but little resistance — [illegible] queen at once — [illegible] day the A.M. to [illegible] for [illegible] driving out drones — dipped some of them in honey and gave to a nucleus with queen cell — were [illegible] — A colony with half Italian drones [illegible]

Voice of Queen — March 27–12 Heard the piping of an old Queen while confined in my hand — Rapidly going up [illegible] store cells and those from which bees have just hatched — [illegible] — Another with 3.2. bees [illegible] enough to [illegible] doing nothing — Red clover honey good for color and flavor — [illegible] is covered with bees — As bees have plenty of other forage [illegible] is in blossom — [illegible] — (30th) [illegible] Colony deprived of queen seems to have stopped driving out the drones — [illegible] that its queen is gone — Removed fertile queen from nucleus and gave queen cell with queen ready to come out — In less than 15 minutes she came out and was [illegible] received by the bees!! One colony with fertile queen allowed several fertile and unfertile caged queens to [illegible] — Others attacked them — This mode of procuring queens a very valuable discovery — Would not bees receive such queen cells when their queen is caged? 30th — Found the young queen after several hours all right — In putting into a cage a handsome queen crushed her with paper stopper! — found another good one caught in paper stopper fixed!! In my hive [illegible] with fertile queen have many eggs in a cell as if laid by fertile [illegible] unless [illegible] there — drones cropped — Colony with late drones ejected a few this A.M. — can see none ejected this P.M. — In two nuclei that [illegible] saw the queen [illegible] by the bees — In two clustering nuclei to day which had no drones saw many drones join each one on the tree — Nothing being "at home" most [illegible] the last few days — (31st) Hot — Robbers have very busy [illegible] drones — Two young queens [illegible] beginning to lay at the close of the 10th day after meeting drones — In no instance have I known one to lay before the 4th day — Only stock with late drones has only one queen cell after laying and yesterday and to day has expelled drones — A stock which had 2nd story and did not swarm [illegible] + 2nd story full of honey had [illegible] — bees got very strong — very many drones — have [illegible] of honey for [illegible] — must always [illegible] as [illegible] strong in bees and [illegible] Drones which joined the clustering nuclei have [illegible] — September 4th Have had two very cool nights almost frost — Bees still feed queens in cages although they have fertile ones below — Find that queens when liberated from cages are not always well received — [illegible] it [illegible] to keep queen in cage while bees can raise no more queens — they [illegible] days - and [illegible], all her queen cells - [illegible] to have [illegible] colony queen [illegible] - Caged a fertile queen in a [illegible] and gave them queen [illegible] queen - [illegible] [illegible] and is [illegible] [illegible] - queen in cage [illegible] - cage down between combs - It is not the practice of the workers to destroy queen cells. While [illegible] a queen [illegible] away her own when their own queen is caged - [illegible] feed caged queen (and [illegible]) [illegible] their own fertile queen is at liberty. Young queen will go to meet drones and lay even when one or more caged queens are in the hive, (5th) Hot - very dry - [illegible] [illegible] bees hiving [illegible] [illegible] bee-head - Large stock with fertile queen [illegible] caged queens [illegible] [illegible] - (9th) Very dry - had a small shower on the 7th - [illegible] day - Queen with colony whose fertile queen was caged [illegible] [illegible] bees - Put a fertile queen in cage - a sealed queen [illegible] [illegible] for cage - [illegible] and [illegible] protected by bees - In the large colony which had [illegible] a number of queen cells - found them very full of royal jelly - [illegible] queens reared in the large colony quite large - [illegible] [illegible] to me [illegible] [illegible] [illegible] in the [illegible] - (Dec. 1st) [illegible] from usual cause - Stocks as a general rule have too much honey - too few bees - were lost in [illegible] [illegible]! Have had straw [illegible] for several days over the [illegible] of a colony - bees are used to the straw [illegible] in [illegible] [illegible] [illegible] - [illegible] that the straw [illegible] can be made to be [illegible] in wintering bees - [illegible] from [illegible] [illegible] [illegible] [illegible] [illegible] in the [illegible] - Queens were put in cages will [illegible] in [illegible] - (24th) The weather [illegible] this month been very mild - Thermometer one day 60° - Bees have been [illegible] [illegible] [illegible] some stocks to day with drone laying queens - they have [illegible] [illegible] have drone and sealed [illegible] [illegible] drone eggs, A large stock [illegible] [illegible] [illegible] with sealed [illegible] - (April 18th 1865) [illegible] from usual cause and from absence - Winter very wet and mild - but [illegible] bees flew frequently - Many died apparently of dysentery - there was much unsealed honey - The best stocks are those which had [illegible] [illegible] - on the whole bees have wintered finely - March was cold - much [illegible] on pleasant days - On Apr. 10th pollen gathered - [illegible] [illegible] [illegible] [illegible] 1st [illegible] [illegible] and some honey brought in - To day found eggs in drone cells of several strong stocks - Weather for the last few weeks very dry - [illegible] [illegible] [illegible] that the ground has frozen - (18th) [illegible] [illegible] rain - [illegible] [illegible] - Bees very greedy on pollen - [illegible] in [illegible] in [illegible] - bees [illegible] [illegible] rain very much needed - 19th A little rain - cleared up pleasant - (20th) White frost - 35° - Bees work on peach blossoms - pollen [illegible] [illegible] - rain much needed - (22d) Very warm - [illegible] in the night - (23) [illegible] - (24) [illegible] (25) Cool pleasant - [illegible] in [illegible] - [illegible] and [illegible] - (26th) Warm - pleasant - (27) Cloudy [illegible] in afternoon very warm - (28) Warm rain - (29) Cloudy - cool - (30) [illegible] - (May 1) warm - clear (2) [illegible] (3) [illegible] - (4) Warm - pleasant - (5) rainy - cool - (6) Cool - cloudy - (7) Rainy - (8, 9, 10) [illegible] - (11, 12) [illegible]

April 13th Returned home from Washington having secured the extension of my patent— Rain
last night and this A.M.— Drones going out of Hives— found Drones at Baltimore on 11th—
Crop looks very promising— (14th) Cool-windy— Bees fly but little— Buckeye in [illegible]
[illegible] in blossom— (15th) Cool A.M.— (16th) Cool A.M.— (17th) Cool night— Buckeye in [illegible]
[illegible]— (18th) Heavy Frost— very cool night— Bees get little honey— [illegible]
comb with [illegible]— (19th) Light Frost— wind changes to South— [illegible]
Saw Bees yesterday working busily on wild cherry blossoms [illegible]— Locust [illegible]
[illegible] just opening— Bees get considerable honey— (20th) Quite warm— [illegible]
Put [illegible] into 10 frame hive— gave more room— Bees get considerable honey—
Had two handsome queens hatch from [illegible]— [illegible]
[illegible] 15 frame hive [illegible]— Locust in South part of [illegible]
(21st) [illegible] very hot— dry— but Locust not [illegible]
[illegible]
[illegible] (22nd) [illegible]— had several beautiful [illegible]
Very dry— Locust in profusion— little honey [illegible]
and [illegible]— (23rd) Very hot— dry— windy— [illegible] of Sugar Maples— [illegible]
[illegible]
[illegible]
in [illegible] 12 days [illegible]
Think [illegible]
from the Locust!— (24th) Very dry— warm— bees gather much from Locust but
[illegible]— (25th) Very dry and warm— work much on Locust— but [illegible]
not so dry— Two weeks [illegible] rain— [illegible]
[illegible] very bad for the white clover— Locust
[illegible] last year— but clover [illegible] dry but [illegible]
[illegible] (26th) Very [illegible]
A.M.— [illegible] around us— Bees have worked wonderfully on the Locust [illegible]
[illegible]
[illegible]
young queens now hatching— (27th) Slight showers last night heavy thunder and showers
around us— none here— but a [illegible] air— [illegible]
come to [illegible] bees— [illegible]
[illegible] last year— [illegible] White clover
on road [illegible]

War, — destruction of life caused by. (Burke. Vol 1. Vin. of Nat. Soc.)

Warmth of Hives — Fill between glass and shutter — and shutter and cover — and in the bottom box — with tan — saw dust — chaff — hay seeds &c from the barn — straw cut fine or any similar material

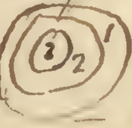
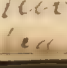
cut straw

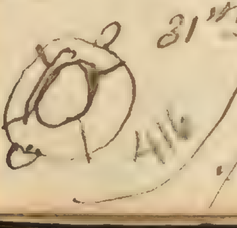
Wax — A great amount of honey consumed in making wax — Dzierzon says that 20 lbs of honey are required to make 1 lb of wax — Others state the amount as much larger — Weighing some honey in a pint tumbler — I found that one oz. of wax would store 1/2 lb of honey. — 2 ounces one lb — It would require at least 2 1/2 lbs of honey to make this wax — To feed a good article of honey with any reference to profit from the sale — must therefore be a losing business — Some very beautiful honey — very thick and wax unusually thin gave the following result — 2 lbs of honey was stored in about 1 1/4 oz comb — The caps of the cells weighed about 1/10 the weight of the whole wax — This gives about 26 lbs of honey to one lb of wax —

Water — Consequences to the bees of a want of — Vid. Cotton's My Bee Book P. 104 also Dzierzon —)

* If it was necessary to feed in cold weather the outer feeder might be filled with cotton — and the whole carefully covered over — If covered of glass — and put in upper — will feed in quite cold weather —

Jany 25th. 1852 — To day my bees were on the wing — noticed some returning far distended — opened one and found it full of water — The week from Jany 18th to 25th — was one of the coldest for many years — one day the coldest for 31 years — and yet an artificial swarm filling only half the hive was out Jan 25th gathering water — Kept in one of my lowest hives — double glass — a divider separating them from the empty space — no outside cover used — this winter has tested the hive — this hungry in water indicates the importance of a water feeder kept where the bees can get to it without being chilled — at all seasons — if the hives are free as they ought to be from dampness they will want water in winter

Jany 20. 1852 / 31st) Water and honey feeder of earthenware — glazed outside — Let it be made thus —  1, is the honey feeder, — 2. the water feeder — 3, the place for the bees to come up — A pane of glass may cover all — or better — a piece of wood  with two holes covered with a small piece of glass — to see when more feed is wanted — and to put in the feed.



Wax— In the consump. of honey to be made into wax— a large amount of oxygen disappears— Does not this produce the great warmth always occasioned by the process of comb-making? and wh. is necessary to the welding of the wax to form the cells? Wisdom of God seen in this—

Wax— by keeping something under frames in Spring— and when new swarms are hived much wax may be saved which will be of considerable worth— When worms are abundant it will not answer perhaps so well—

May 1858

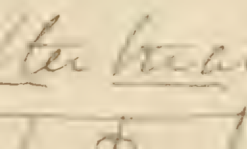
Journal for [illegible]—) [illegible] bee season very poor— (28th) Wind— East— gray day— [illegible] a mile— yet [illegible] more honey— bees got little to day— [illegible] black bees very bad to rob— [illegible] "yellow coats" [illegible] which [illegible] much faster than [illegible] — Had three very [illegible] queen [illegible] to day— (29th) Wind from S. E. very strong— [illegible] heavy rain [illegible] rain in night— [illegible] last few days [illegible] — bees [illegible] better than [illegible] (in consequence of [illegible] last [illegible]) were not strong enough to work [illegible] last year— White clover abundant— (30th) [illegible] A.M. cloudy cool wind S.W.— A queen hatched [illegible] her cell has been slightly crushed in— Last night gave a young unfertile queen to a colony with queen cells— having taken away [illegible] queen cell. This A.M. found them built up again— queen active but one of her wings [illegible] — this must have been [illegible] by bees— [illegible] with [illegible] queen [illegible] out— Cool— damp— saw bees on raspberry [illegible] dark— Had [illegible] yesterday— the rain of yesterday has changed the prospect for honey— it is now very fair— Queens are filling their cells with eggs— and before the bees get much honey there will be a large amount of brood— (31) A good shower last night— and a [illegible] this P.M.— [illegible] — A queen [illegible] eggs [illegible] (June 1st) [illegible]

March 31. 52— Piece of straw or plaster wood put in feeder ⊙— to keep bees from [illegible]

Water Feb. 24, 1852 — I am persuaded that my water feeder will be of [illegible] first importance in promoting early breeding — When the weather is warm — bees will obtain water from the dew on the grass — but little need then of water feeder —

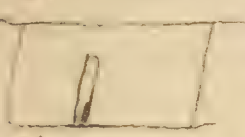
(Feb. 18th 1862) Wintering bees — When the outlets are only 1/4" wide and there is a trough 3/4" & 1/2" deep — put a strip 1/8" X 1/4 X 14" into the trough — with paper or leather wedge it up close against the 1/8" strip — the frames [illegible] and be kept in winter 1/2" or 3/8" higher up from the B.B. so as to give room below for cleaning out more easily [illegible] — If the honey board is kept on it should have blocks or wedges at the four corners to raise it 3/8" —

Winter Passages I estimate after trial that my shaving passages Feb. 25, 1862 — guided on a board

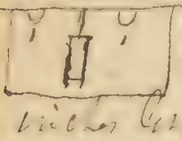


were cut from three to four cents only per hive — & I like the plan yet devised for a winter passage & like it the best

Winter Passage — August 21st — 1865 — See Journal of that date —
Sept. 16th 1865 — I am delighted with the slitted winter passage —



bees do not fill it up — should be about two cells wide — width of space between cells — See Journal for August and Sept. 1865 — Nov. 11th 1865 — Think that the width of slot should be about 3 cells — like it more and more — To get it without cutting



Suspend with tin same as shaving plan — a piece of cork — say 4 1/2 × 7/8 × 1 — with a slot about 3 1/2 inches long by 3/8" wide — ! cork warmer to bees even than comb — too expensive — this for those who do not wish to cut — serve also to make combs straighter by compelling bees to begin at (1,1,) instead of in the middle —

shows the form of cork winter passage — this will be fully tried before publicly recommended — 18th — Cannot shaving winter passage be made as well as cork?

— Think when a block rivet with a that holds to frame — both will be too
Thin! large headed tack to hold together — a rivet too expensive — See ~~H.D.~~ P.

(March 1857) Italianizing bees on Mr. C. Hive —

(Mr R. C. Otis [illegible] suggests that in [illegible] the [illegible] after the [illegible] comb [illegible] removed, he [illegible] should [illegible], [illegible] the [illegible] to [illegible] the bees to cluster [illegible] the suggestion seems to me to be [illegible] — Mr. C. [illegible] the spaces between the combs [illegible] when there is no [illegible] the bees [illegible] the comb [illegible] [illegible] — this [illegible] the [illegible] large [illegible] in [illegible] of the large [illegible] the comb — [illegible] adapted to [illegible]

(Queen) — Queen impregnated 20th has laid a few eggs — two days [illegible] drones out — Little if any honey got to day — may have lost by high wind — (2nd) 44° — Before clover warmed up — Italian bees disposed to [illegible] when hive opened — by 10 a.m. — great honey got [illegible] — clustered [illegible] but little done — yet bees [illegible] on maples — [illegible] on [illegible] (Dzierzon) Colony full of very healthy Italian Q. [illegible] also [illegible] — The [illegible] bees [illegible] the honey [illegible] the [illegible] — (3rd) 44° — Bees when it grew warm worked moderately on clover — Honey [illegible] — (4th) 44° — Same as yesterday — (5th) 44° — green [illegible] for several days — Queen of [illegible] to day — Was not seen so abundant as last year — (6th) 50° — Soon after [illegible] cold wind and clouds from the East — bees gathered but little — An impregnated queen of 3 yesterday had [illegible] — the [illegible] a little — of large [illegible] from which the queen was taken May 28th — had four queen [illegible] only the [illegible] one young [illegible] and [illegible] — less than 12 days [illegible] a [illegible] nearly [illegible] queen — [illegible] that [illegible] for them — caged [illegible] queens to make room for the queen cells — (7th) 44° — [illegible] did [illegible] on [illegible] — [illegible] on them — (8th) removed [illegible] queen [illegible] impregnated but not laying — bees got [illegible] all their [illegible]

Winter linings &c See interleaved journal i after Loo – also Li

Wintering Bees. A dark perfectly dry cellar the best place for bees in winter. It is desirable to keep them perfectly quiet – The temperature ought not to be below freezing – about 40° not over 50° – A perfectly dark room will answer if not too warm – Unless the place where they are put in winter is very favorable – they ought not to be removed from their stands – If their hives are suitably constructed and thoroughly protected – ~~and~~ it will be the safest plan to let them remain on their stands – if the stocks are strong and well supplied with honey – Very great care should be taken not to disturb bees in the winter – If they are excited to activity many will be separated from the cluster be chilled and perish – they will consume more food – and from the accumulation of feces be less able to bear confinement without injury – If there comes a warm, sunny day it will greatly benefit them to let them fly – Hives shut up should at such times be brought out – The bottom boards of those standing out should be slipped to expose them to the full influence of the warm air – and this time should be selected to clean their bottom boards from dead bees ~~& dirt~~ It will be found that ~~when~~ many bees lose their lives in carrying out the dead – they fall with them on the snow or cold ground and are too much chilled to regain their hives – If bees do not winter well – but are weak in the Spring – but little profit can be expected from them – Early swarming – or the strength necessary for this – cannot be expected – Small colonies are most liable to suffer in winter – If an Apiary is properly managed every colony in the Fall will be suitably provided with bees, comb and honey – and none but such will be retained unless for the purpose of using them for Queen breeders in the Spring – unusual precautions must be taken to preserve such colonies – The use of hives with interchangeable frames enables the Apiarian to equalize his colonies – My hives are so constructed, ~~that~~ as to be free from the dampness which condenses on the sides and tops of ordinary hives – filling them often with mould and ice – and often starving the bees by preventing them from passing to fresh combs containing their stores – The cheapest investment which the Apiarian can make is in the purchase of good hives – If such a hive was to cost $5 it will be cheaper than a poor, thin hive received as a gift –

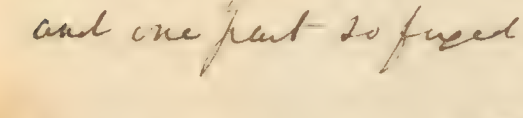
By Dec We –

Willow - The different kinds of willow yield abundant supplies of honey - and their growth should be encouraged. - They afford a very early supply and are particularly valuable on that account - Keeping early than the other kinds - come after soft maples - before fruit.

Wintering Bees There can be no doubt that a dry, dark place neither too warm nor too cool is the best place for bees in winter. If the temperature is too high they will be excited to unnatural activity - and will suffer in various ways - if too low the motion wh. they will be obliged to keep up to preserve their warmth will require a large consumption of stores - If the temperature is such that it disposes them to keep perfectly quiet - they are almost in a state of hibernation - From observⁿ I am inclined to think that 50° F. with darkness - is the right temperature - If my views are correct a bee-keeper on a large scale will find it very profitable to secure such a place for wintering his bees

Jan. 1st 1852 - I propose to put boards or pine or cedar brush against the legs of my hives - then to pile up earth &c so as effectually to exclude frost - then the external opening may be made very small - and the bees will winter well - I am not sure that the same plan will not answer equally well for summer - enabling them to keep a cool temperature in their hives - guarding them from all danger of a sudden chill from air admitted below - and enabling us to guard them most effectually against the moth by contracting the entrances to the hive - without causing the bees to suffer from want of air - This plan appears to me increasingly important - The platform bottom board &c should of course be most thoroughly painted with the Ohio paint or something of the same kind. If it was found that this plan will answer - the hives might be terraced around and one part so fixed as to give access at any time to the bottom board -

March 2nd 1852 Plan for supporting hives - AB and CD are joists or planks



say 2 inch thick and ~~AB 3 and CD the~~ 4 inches high - CD elevated on stones &c one inch - to give the slant to the hives - & the space below may be excavated a foot or more - and at the sides banked up so as to exclude heat or cold - All the hives communicating with the space below - and are kept warm in summer and cool in winter Where the situation will admit they ought to face as represented -

Worms— Mr. Frazer ~~which~~ keeps combs above Pat. B. out of reach of worms & glass sides against them— one worm will do much damage in a comb— their sneaking motions do not seem to excite the anger of the bees so much as rapid motion of the miller—

See N. E. Journal— July 9th 1853 / Comb with queen cells [illegible] to [illegible] ready to come out— hatched in a few minutes— [illegible] of bees— & I [illegible] them [illegible] that [illegible] were [illegible] or [illegible] [illegible] by the bee [illegible]? (15 minutes later) I put [illegible] [illegible] both to a strong nucleus having a very fertile queen— [illegible] that when [illegible] hatched she could crawl [illegible] the combs— the old [illegible] was [illegible]! moves about in search for [illegible] as [illegible] as a just hatched [illegible]! the old queen was on the next comb! This goes to demonstrate that young queens are to be more [illegible] by bees than young [illegible]!!— This was [illegible] (Later) Cannot find the young queen— many [illegible]— may [illegible] killed— if she is gone not conclusive— It is very certain that just hatched queens are not near so likely to be [illegible] as older ones— [illegible] for honey Bees (they) [illegible] upon "clover" [illegible] If this good for bees— and for [illegible] coming about ten to fourteen days later than the other [illegible] would be very profitable to cultivate— A queen caged for about ten weeks [illegible] was [illegible] the [illegible] of the 6th— She was laying when looked at very early this [illegible]— say in a little more 2 1/2 days— May not [illegible] in the age of queen [illegible] a difference in the [illegible] of laying— 3d 1½ (45°) Found a piece of drone comb building in a colony with a very fertile queen— not very strong— to fill a vacancy— away from brood— Found 7/2 [illegible] in the one hatched yesterday in colony that killed queen— [illegible] decide whether bees with caged [illegible] will build worker comb— Put a just hatched queen upon a comb of a strong nucleus with a very fertile queen— excited some notice— [illegible] bees [illegible] it— a very little disposition to [illegible] it in— Gave to a [illegible] nucleus a queen caged for a week a [illegible] cage was opened— but it great excitement in the hive! In [illegible] another just hatched [illegible] to same nucleus— Had one [illegible] more than the other— Put same queen on comb of another nucleus with fertile queen— about the same as with the 1st nucleus— [illegible] in a large stock— [illegible] in good stock with unfertile queen— [illegible]

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[illegible] the hive or comb — one of that [illegible] — Found no lame queen — the [illegible] queen [illegible] queen cells — nearly [illegible] — and yet she had been 3 days in the hive — [illegible] [illegible] but egg [illegible] yet — Appears [illegible] with [illegible] "pattern" comb [illegible] [illegible] the comb [illegible] — the [illegible] days to [illegible] comb — bees [illegible] greatly [illegible] to build combs — If honey comes [illegible] they [illegible] bees — [illegible] will — [illegible] be [illegible] Found a [illegible] all caged queen [illegible] comb — [illegible] caged queen as soon as they [illegible] on [illegible] 5th day [illegible] if they [illegible] lay as soon as if not caged — (10h) 50° — Wind [illegible] bees [illegible] (Italian) doing next to nothing — I [illegible] a [illegible] from [illegible] [illegible] — Bee Books — (11h) 60° — [illegible] a very good rain last night — [illegible] for bees — [illegible] Found [illegible] [illegible] [illegible] queen [illegible] + [illegible] with a [illegible] to the hive — bees [illegible] a great [illegible] of [illegible] — [illegible] [illegible] queen and the [illegible] — [illegible] that the bees [illegible] [illegible] — Neither [illegible] [illegible] the [illegible] of [illegible] [illegible] — Caged fertile queen — queen [illegible] nearly [illegible] queen cells — [illegible] [illegible] caged [illegible] — [illegible] bees [illegible] caged [illegible] [illegible] (didn't [illegible] caged) [illegible] days old — [illegible] [illegible] caged a [illegible] — [illegible] (4h) 54° — [illegible] to [illegible] [illegible] caged fertile queen [illegible] [illegible] caged [illegible] — [illegible] the [illegible] — The [illegible] [illegible] [illegible] (4 [illegible]) [illegible] queens [illegible] queen [illegible] — [illegible] [illegible] [illegible] [illegible] queen [illegible] Lent [illegible] [illegible] [illegible] old queen [illegible] queen [illegible] [illegible] [illegible] [illegible] They have [illegible] the queen [illegible] and [illegible] the [illegible] queen [illegible] has an old queen not very fertile [illegible] bees [illegible] the care of queen cells [illegible] the queen [illegible] [illegible] fertile queen [illegible] (Curtis) They [illegible] the queen cells! [illegible] [illegible] a second time! Then [illegible] [illegible] [illegible] queen [illegible]! [illegible] [illegible] queen [illegible]

3 Bee [illegible]

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April 2 — Examined five stocks of Italian bees imported by Mr S. B. Parsons — brought in the original gums — hollow sections of trees — Only one contained any live bees — Died from want of water after they were landed — put in green house — many died there on glass — fed them out of doors so as to attract robbers — One had a dead queen with by one hundred bees — these had starved — The one with living bees had less than a pint — saw sealed brood — (3rd) put the hive with live bees in a dry cellar until I could transfer it — (4th) cut out the combs — found a living queen — cells had a few eggs — Never handled anything in my life with so much care. If the Queen had been killed should have felt worse than any regicide ever felt — for they mean to kill royalties — just when I almost despaired of finding a live queen, altho I had seen some eggs in the cells I caught sight of Italian or Ligurian Royalty — Strange that so small a creature should be capable of producing so exciting an effect — I carefully put her in a queen cage — cut out the only comb that had any brood, and put the whole colony in the cellar — 4th I was very early fearful that the queen might become chilled — found that the bees had left her — took her out of her cage with fear and trembling — she was stiff — could hardly move — warmed her with my breath — returned her to her colony — 5th Colony kept in cellar still 6th Do — 7th Transferred a colony of Common bees — removed queen — Robbers annoyed them and they were long in finding out the qu— was gone — gave them Italian in a cage clustered round it — Gave Italians their own qu— in cage — clustered round it — Let common queen out — missed her — feared that she had gone back to her colony — never saw — let out Ital. queen — very carefully — bees welcomed her — now I have done all I could for her — and must patiently await the result — I ought not to have let the common queen out of her cage — but did not think that she was taken wing — 8th Put hive with Italians for safety on roof of piazza — did not know that it had been painted within a week — weather stormy — multitudes of bees died — within hive — crawling out! paint — paint — paint!! 9th Removed hive to another location — bees dying — [illegible] or more have died — 11th bees doing well now — saw queen all right — Supp. in [illegible] for Carlton —

12th — Gave Italian and common bees to Prof. Wyman of Cambridge for examination —
13th Left for Greenfield — 15th Preached to the dear people in Colerain —
14th very cold — severe freeze at night — 16th a little warmer — 17. Left for
(Flushing — 18) — Spent day in city — looking for arrival of steamer Arago with the
further importation of Italian bees — Left city for Flushing at 6 P.M. — Mr
Parsons received a Telegraph stating that the Arago would be at the docks
at 9 P.M. — we took a private conveyance to Hunter's Point — thence to
New York — Reached Steamer at 10 P.M. — The German & Italian with the
bees report poorly of them — Had 27 in small cases — all put up wrong —
too many saw clefts to let in light and keep bees in a constant worry —
Two said to have the best queens from 140 queens were killed by the
bee-keeper in his constant charge — weather bad — head winds — bees
sick — last two days many died — The two above spoken of — one
lively — the other "sick" as the Italian said — tried to get them off
that night to keep out of damp sea air — could not get a permit —
for them to leave — ~~Returned with~~ Spent the night with Mr Parsons at the
Astor house — went to bed at 1. A.M. — rose 1/4 before 5 — Bees in my
head all night — went to steamer — got my two stocks — started
for Grand St Ferry — rode up in Brooklyn a ride to Hunter's Point — came
within a few minutes of missing the Flushing cars — One stock gave
no offensive buzz — opened it before breakfast — all seemed dead —
starved — not sick — Laid them out on paper — a few came to —
greedily took honey — found queen alive — greedily took honey — put her
in queen cage with some other bees — soon became very lively — Opened
the other box — bees lively — flew at once — (the weather charming for this)
found their queen well — her hopes seem poor — Drummed two stocks
returned queen of 1st to her hive — put it in a new place — gave
No 1 Italian to the bees when they missed their own in a cage —
perfumed them at once — did not see Queen — of second drummed stock —
think she did not come out — when they missed her gave Italian 2. No 2. in a
cage — perfumed them — moved old stock to a new place — Set out the queens
and they were well received — Queen No 2. has bad hooks to her feet —
fear for her — Examined combs in box — No 1 — had a small piece of new
comb and six or eight eggs in it — no honey — No 2 — had superabundance
of honey — very few dead bees — Queen of 1st Italian stock transferred has
begun to lay — bees have been fed — have built new comb — saw her on this —
On going queen No 2 — used German Queen cage — sliding some — she got

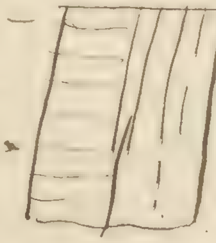
out and flew — caught her gently like a fly with a thrust of my hand — very narrow escape — If I had missed her ~~cans~~ she might have been too far gone to have been revived — On what nice hinges unfold events now — Thought I could have got the race from these few eggs — raised queen — drone layer — unfertilized her eggs as = before only — then raised queens from them &c — ~~20~~ 19th At 2 P.M. (19) Mr Bodman the Italian bee keeper arrived with the balance of Italian bees from Steamer — The way the bees were put up for the voyage bad — If the passage had been 2 or 3 days shorter most of them might have arrived safe — In some boxes the combs were loose and had moved about so as to crush bees — one queen was found crushed — Two queens with only a dozen or so of bees — one was in the [illegible] — revived — and became fair — but died in the night — Of thirty small colonies — have only 7 living queens! —

(20) Drove a common stock — made two of it — gave an Italian queen to one in a queen cage — One of the queens given yesterday — was found to be outside of the hive and unable to walk — She was minus one leg and the claw on another so that when I gave her to the bees that she could not travel well on comb — Indeed she fell off from the comb — Mr Bodmer gave an Italian queen to a very small number of bees in a small box with honey comb — took it to a new place — All quiet last night — Mr Bodmer does not approve of my mode of giving Italian queen so soon — He thought one given in this way was wrong — feared no queen — it did not act like a queenless stock — (21) — The last mentioned hive appears to be all right this A.M. — Weather very cool and wet —

(22) On ~~Saturday~~ the small colony with the Italian queen given to it which Mr Bodmer made left the hive — queen lost — The same day he made two more such colonies and gave them many more bees — all right — This A.M. looked at the one I made that he feared was wrong — all right — beautiful queen — "bellissima magnifica" good — very good — I happy — very happy"!! Never saw a human being more delighted — says it is the best queen out of 140! the only I saved from death by starvation — He says that at first he no like my hive — but now every day — more — more — he no give Italian — German — (Dzierzon) hive any more — ~~When~~ he came he thought this "wild country" brought funk, and the common utensils! — Made another small stock to put to it an Italian queen — I have no doubt but that black bees can always (few or many) be made in any way to accept of an Italian queen — (24th) Recd — Bees from Ship, arrived with Mr Long and my own — were put up — came safely — 25th [illegible] — [illegible] — Occupied with Mr [illegible] — 25th — [illegible] in the A.M. — [illegible] On my return found "bellissima magnifica" dead — no eggs laid by her — and

royal cells started! — keep 2 2 3 still in my [illegible] — the weather [illegible] [illegible] a queen, that I rescued from the jaws of death — only to die without laying — Neither four are here [illegible] e [illegible] eggs — (27th) there are X a few eggs in hive of "Ellipsina" — but she was evidently in poor health — To day I introduced the first queen that came — to one of my hives of old fellow — It had a powerful stock of bees — and drones well advanced — I drove out queen and all the bees — and gave queen with her colony to the combs — picked the drones and put drone comb with eggs to cells — This stock to have plenty of drone comb, brood — and not to be meddled with — devoted to drone raising — All the four queens are apparently safely introduced to strong stocks — (28th) Weather Every appearance favorable — weather yesterday and to day charming — bees seem to be doing well on dandelion and cherry — Mr Langein still going on with the transferring of bees to my hives — the splints are fast [illegible] Had a [illegible] night and quite warm to day — (29) Ditto — (30th) Stormy — ~~3d~~ (1st May) Two nuclei to which on 26 [illegible] [illegible] ~~a few~~ two pieces (to each) 3 inch of Italian brood had been given — are rearing each about six queens — prefer these small boxes for queen raising — as I can cut up brood comb to much better advantage — and very easy to fasten it in the small frames — 2nd May — Still stormy nothing can be done with bees — (3rd) Was away a day from [illegible] — found another Italian Queen gone — sealed queens in hive [illegible] out of her head — Was she stolen? I fear it much from many indications — To night have put [illegible] lock and key on all the Italian stocks — [illegible] hope for the best — as I have now a number of stocks (nuclei) with the young queens and these soon have Italian drones — (4th) Just turn clear up for a month — splendid day for bees — cherries in blossom — transferred ~~three~~ (3) stocks — one had nearly 1/2 drone comb — Put a large piece of drone comb to a stock with Italian queen — (5th) Beautiful day — 4 stocks transferred — Bees got much honey from cherry, plum, peach — Stocks with Italian queens are to day working very powerfully — Opened the nucleus to which I gave Italian brood — 4 sealed queens — two so close that they cannot be separated — Shall next week make three from the one nucleus — Operations to day very prosperous —

(6th) [illegible] cloudy day — bees gather much from blossoms — (7th) Very warm — bees gathering much — 4 stocks have swarmed — nearly gathered honey very thin and very abundant — eggs out of cells — a makes it more difficult to transfer — Took out one sealed Italian to give to a nucleus rearing black queens — took from them their unsealed queens — gave them to the stock having three sealed Italians — also gave some of their brood — want to have the jelly to use to make nuclei raise Italian queens in such cells as I have designated — Everything has been done too much in of ay air — too many rules — Have taken three cuts of "ointing glass" in a very short time — It ... the wood and does not draw too much sun — just what we want — Italian says that in his country not so ~~yellow~~ yellow — (8th) Made a number of small boxes with comb in frames for nuclei — Drove a hamper stock of black bees — gave their comb to other hives — also queen to a queenless hive. Made one of my hives thus —



transferred Italian queen with stock into it — She was a beauty — Italian wants her to lay in these small frames to make nuclei with the comb from any cutting — I prefer to cut and try to take one end during ... all more to the other — Then made more nuclei with some of her brood — Also made two from sealed Italian Queens — Found one cell very likely ... left that and ~~two~~ one just — Gave bees of fresh stocks to form the nuclei — Gave more bees to the Italian Queen in the transferred hive — Found an Italian Queen hatched in one of my nuclei — First one we have had born here! Could hardly restrain myself for joy — Mr. M. Baldridge and Dr. E. Parsons were present when I opened her — She was pale — but of beautiful size and color — Took out the two sealed queens so close together that they could be separated — and gave them to another nucleus — (9th) Rainy — yesterday cloudy and cool — Examined nucleus with two Ital. Q. cells so close that they could not be separated — one hatched — light colored and weak — like the one seen yesterday — cell of other opened on the side — queen alive but just so — some claws gone — think bees opened her cell — young queen not strong enough to do it — As I looked at this nucleus just before dinner and as early this A.M. as I could ~~see~~ — did all I could to save both — In hive which had [illegible] queen one where she died — found thirteen fine cells from which queens had hatched or were killed — wanted to open and cut out these cells yesterday — but Mr Baldridge was unwilling — do not blame him as he had lost the count of time — and did not feel the importance of cutting out these queen cells yesterday as I did — Opened another hive and found hatched Italian queen — another ready to hatch — removed hatched one and gave her

a nucleus — all these queens are very light and young — very different from those belonging
in swarming hives — their colors were deformed even though so young — except the one I took
out of cell — nearly dead — that has no distinguishing marks — P.M. — One of Y
Mr Bodmer's nuclei put to an Italian queen cell has abandoned it and the
bees have gone to a neighboring nucleus — will not do to keep the nuclei so
near together — Found two of my nuclei with hatched Italians had too few
bees — gave them more from a queenless transferred hive — bees near night in
one of them very uneasy — fear for queen — Mr Bodmer right in giving them
plenty of bees at the start — danger in giving more — would prefer to strengthen
with hatching bees — Have used jelly from a black queen cell — to put in a
number of cells with Italian brood — to see whether I can determine the bees
to make queen cells when I want them — three more stocks here, and Mr
Belding's old hive has comb if not large enough to free frame on one side

At forty transferred some time ago not working much — edges of comb very
thick and not pared off — bees this covered as their comb was quite old
Yesterday Mr Parsons [illegible] suggested rubber for holding the slats in place
think it will be too late — (10th) Found the two hatched Italian queens to whom
I had given more bees all right this A.M. — They still have too few — Before
I take them home again give them just hatching brood — Each one receiving
Italian queens should have one Italian & impregnated by a common drone — so
that he can see what is the appearance of the spurious brood — (he will also give
~~a tho~~ 'young' Italy drones) also some of the workers from the original
queens so that he may have a proper standard of comparison — (10 A.M.)
Opened old pattern hive of mine to which I gave the first Italian Queen —
found capped drone brood — is also all safe even if original queen should
die — gave upper box with frames — one with empty comb — secured all
fast with drawbars to keep it to the stand — If the queens have the places
they roam above they will keep below mainly for brood — This stock has an
abundance of drone brood and cells will make all the Italian drones needed
on the premises — Fixed as a pattern hive to keep in common drones — Measured
cells of Italian comb and black bees comb (see D[illegible]) Gave to a nuclei two
small frames with the Italian queens remains from Queen No (2) — bought one by Mr
Bodmer — all my three hatched queens are from No (1) bought one by Mr
Parsons — Queen (2) larger than queen (1) — Must get drone brood from Queen
(3) and some nuclei or means of rearing a few queens from her — When using
jelly (see May 9) bees eat most greedily as soon as queen cell is [illegible] —

(11th) Weather fair in P.M. — Could not get my nuclei out of cellar until late in P.M. as I was absent — Two of them remaining Ital. Q. seem failures — Some such too dark — have not been able to get these properly? Mr Bodman has made some others — Must now make two supplying in bees — one from Queen No 2 — another from No 3 — These will give me queens to take home and with drone brood taken also — all right — (12th) Found the two remaining queens right — one cell was broken in draining bees — bees destroyed the others — 4 more transferred — Ital. queen cell has a dead queen — also two others — Strengthening my nuclei in bees — too many leave for old home as we have not bees from a distance — Shall confine some of them for 36 hours — giving water etc — Formed two more nuclei with Italian Brood from Queen No 2 — Shall take my drones from Queen No 3 — so as to have no queens impregnated by drones from a common mother — Hope still to get the original queen — as ten more are expected by the 14th or 15th — (13th) Sabbath day — Hear[illegible] Mr Beecher in the A.M. (14th) Quite warm — Steamer Fulton in — mails — quickest trip — no bees from Harmon! no letter even to Mr Parsons! Called suddenly to Washington I numbered my nuclei and leave written directions how to put them out from cellar — (set them at night to prevent robbery) (15th) Reached Washington at 5 P.M. — Consulted Judge Mason on my Patent — he further assures me that I have not conveyed away any renewal! I never intended to — but thought that unwittingly I had — 16th — Found my nuclei had not been set out in their proper places — queen cells destroyed — and fear the loss of some of my Italian queens — but hope for the best (17th) Almost a Frost — Wind N.E. — Bees fly some — opened original queen's hive — found very much sealed drones — removed some for a nuclei — with a sealed queen! no other queen cells — saw queen — well colored but not so large as the others — Saw two of my first hatched Italian queens — one have not seen — formed two other nuclei with Italian brood — All now promising well — in a few days many Italian drones will be in the way! (18th) Wind still N.E. — has been easterly most of the month — cloudy — rain — Inspected powerful stock of Mr Hicks a few rods from Mr Parsons — very great quantity of drone brood — very many hatched drones — Took a young I.Q. from original hive (Q. No 1) — Had begun to lay — impregnated by a black drone — formed a nucleus for her — Made two nuclei with I. brood from Queen Heart III — Each of these queens has many hatching Italian workers — (19th) Beautiful

day — Examined all my nuclei — (I) has I.Q. laying — Italian worker II. I.Q. — III — Gave
I.R. to raise a queen IV — Has I.Q. — (V) reared ~~Gave brood to rear an~~ Has I.Q. VI to rear a
I.Q. VII — Rears I.Q. — VIII. Has raised I.Q. from Q. No 1 — All often to be
purifying — (20th) Lovely day — heard H. R. Beecher — (21) Rain with [illegible] at
night — [illegible] — thunder lightning much rain — Great tornado in S.W. [illegible] —
(22) Cloudy — clear — bees are working busy — nuclei especially — queen taken with
several drones from original queen has hatched — Have [illegible] fine queens from the
same mother. one quite dark contrary with the other — Put original mother
with her bees to [illegible] frame of worker comb — Queen bees are bound to [illegible] the
filled up with brood or honey — other queen cells rearing — [illegible]
[illegible] for [illegible] and we can oblige the brood for nuclei — also [illegible]
with of bees [illegible] off drones as they [illegible] do [illegible] — [illegible] also lay a [illegible]
[illegible] of drone eggs — Had Mr R[illegible] and [illegible] to a visit — Judge [illegible]
to an Italian Bees and the practical working of my hive — (23rd) Placed nuclei
with Italian Drones and brood for rearing queens to go to [illegible] — (24)
Opened them in Phila [illegible] it [illegible] queen disappeared — Left at 11 P.M.
[illegible] — 28 — [illegible] will bees [illegible] — 26th Returned
home at noon — Found a swarm in the box — [illegible]
few minutes — Hived both — after which they went together — Found that a swarm
came out and left the 14th — [illegible] to day [illegible] second swarm —
Gave an Italian queen to some of the [illegible] — Found that
the queen [illegible] in [illegible] gone [illegible]
[illegible] hatched [illegible] of the bees [illegible] — [illegible] killed —
(27th) Warm — pleasant [illegible] 28 — Found a swarm — [illegible] queen
[illegible] eggs in [illegible] queen — [illegible]
with [illegible] drones — [illegible] my [illegible] — [illegible]
the hive — had been much disturbed — put the [illegible] — 29th Had
an enormous swarm from 2½ bushel hive — Could not find queen — [illegible]
[illegible] — gave [illegible] Italian queen [illegible] in cage — [illegible] with [illegible]
found her — put again in cage — then let it all [illegible]
[illegible] to [illegible] the [illegible] — [illegible]
[illegible] to [illegible] got an Italian — put in cage — [illegible]
to her — [illegible] — [illegible] I put her in cage
could not find her! bees acted as though queen — but did not
enter — clustering in [illegible] — [illegible]
of [illegible] go — left [illegible] for [illegible] I.Q.;

[illegible] that my queen [illegible] was not [illegible] — my [illegible] [illegible] dr[illegible] [illegible] them for 40 days — then [illegible] — (30th) Magnificent [illegible] by [illegible] last night — [illegible] quite [illegible] — [illegible] yet [illegible] [illegible] 92 [illegible] [illegible] 92 [illegible] yesterday! [illegible] the [illegible] hatched last night — [illegible] (a [illegible]) — [illegible] Italian [illegible] the [illegible] queen — [illegible] Italian [illegible] [illegible] — [illegible] Italian [illegible] — [illegible] [illegible] that some of the [illegible] I thought [illegible] not Italian [illegible] — [illegible] again tomorrow — I must [illegible] queens [illegible] Italian drones [illegible] to get [illegible] If I can get only one — [illegible] — [illegible] cold and very windy — nothing [illegible] — [illegible]

(31st) Cold, raw day — some rain — bees do nothing — Found two [illegible] hatched last night one in a small cell (bottom of [illegible] would not admit of its being made longer) was under size — Saw an Italian looking bee — [illegible] could not [illegible] this [illegible] — Found many of the drones [illegible] not Italian — [illegible] queen [illegible] could not have been [illegible] — [illegible] very beautiful — full size — [illegible] a [illegible] very large [illegible] — am much encouraged in this [illegible] — (June 1st) Another beautiful queen has hatched — Italian [illegible] [illegible] — [illegible] queens [illegible] 2 [illegible] [illegible] 2 [illegible] Italian [illegible] from the [illegible] [illegible] not [illegible] by [illegible] [illegible] impregnated queens — There are a [illegible] [illegible] queens — [illegible] not rely on their drones at all — [illegible] [illegible] [illegible] [illegible] will be [illegible] [illegible] must be [illegible] — [illegible] chances [illegible] [illegible] which [illegible]

Aug 9th — Settled — bees are getting pretty — [illegible]
B. [illegible] for the purpose [illegible] making i [illegible] Y
the box — Made [illegible] [illegible] [illegible]
[illegible] [illegible] bees [illegible] — [illegible] [illegible]
(4th) [illegible] — did not get the queen [illegible]
[illegible] — gave an Italian queen — she was stung
and [illegible] in a moment — It will not do to [illegible]
[illegible] bees [illegible] [illegible]
[illegible] — Have 8 [illegible] queens [illegible]
[illegible] the Italian may be taken — The drones
of [illegible] Italian [illegible] — today they were
flying very briskly — [illegible] [illegible] — [illegible] are
all [illegible] [illegible] well — [illegible] [illegible]
bottom [illegible] 3 8th [illegible] [illegible]
[illegible] [illegible] — bees [illegible] — (9th) [illegible]
[illegible] days very dry [illegible] — bees have done [illegible]
[illegible] — many [illegible] high [illegible] — [illegible]
[illegible] small [illegible] carried off. One [illegible] [illegible]
(drumming) 11 minus a queen — 2nd [illegible] queen cell [illegible]
a queen — [illegible] — [illegible] [illegible] the [illegible]
3rd another [illegible] queen — 4th [illegible] queen [illegible]
[illegible]
[illegible] queen — (10th) [illegible] 11th
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] — (13th) [illegible]
[illegible] — [illegible] common drones — [illegible] not [illegible]
than common queens — a little rain last night [illegible] today
bees are [illegible] — [illegible]
very good day for honey — saw bees on the red clover — (14th)
Caught a bee on red clover — honey-bag well supplied! Raised
a black — queen very large — [illegible] — gave it an unfertile
[illegible] Italian queen very small — she [illegible] without any

Young Queens— Have found out this season (1852) that bees often fail in their first attempt to rear a Y. Queen— they often attempt many and rear none— find they do better with a second lot of brood comb— given afterward)

[illegible]— Saw a queen in a honey box the last one [illegible] comb— the shutter was removed— took out box [illegible] put on another hive— set it in place of old one— New nucleus made by putting young queen with some of the bees [illegible] hive [illegible] from a cluster in another hive— shut up 24 hours [illegible] enough— Find no eggs in [illegible] of new comb— (15th) Never saw so many bees working on the red clover— many more on red than on white! Some with bee bread— some only honey! They seem to prefer the heads that are near [illegible] of them! Can they get down into the petals better— Has the long drought and the exceedingly dry spring made any change for the better (for bees) in the red clover— Saw on that [illegible] on the [illegible] [illegible] off before I could [illegible] his [illegible]— Bought home two very ~~[illegible]~~ heavy old hives— each one holds at least two bushels— Such large hives have swarms [illegible]— and have done much better in proportion than the ~~[illegible]~~ smaller ones— (16th) [illegible] after the [illegible] bees working [illegible]— Made two swarms from old box— [illegible] for others— Saw no queen in all the [illegible]! Put some bees to a small nucleus with unfertile queen— they [illegible] out [illegible] a tree— (17th) Bees [illegible] on [illegible] clover and [illegible]— [illegible] (Am. [illegible]) On a [illegible] [illegible]— (18th) Made two more swarms from [illegible] [illegible] the [illegible] in the place of [illegible] [illegible] [illegible]— [illegible] this [illegible] have swarmed very little— Saw [illegible] the swarm [illegible]— (19th) Bees working pretty well— but weather too dry— a slight shower [illegible] yesterday evening— Made for [illegible] P[illegible] of College Cane— 7 swarms by driving— put most of the [illegible] sticks in place of [illegible] [illegible] sticks— [illegible] to [illegible]— Made two them from that box purchased by myself – The black queen very heavy and large – [illegible] laying [illegible] of the [illegible] we had queen cells [illegible] 3 of the [illegible] – saved them – One left and joined the [illegible] [illegible] – [illegible] [illegible] [illegible] one of the black queens and put in stead of another that very heavy – gave them the queen [illegible] (1/2 [illegible] from No 1) – the queen [illegible] that [illegible] – I think [illegible] the colony that she had not much for days for honey – [illegible] that the frames [illegible] [illegible] building of bees – discourage them? Might not this form be better? Only 3 slats each [illegible] – [illegible] with [illegible] better – but must stick out comb –

(21) Weather still very dry – Bees do not seem to work much on Linden – Went to Lodge [illegible] and made some [illegible] for Dr Pearce One swarm [illegible] two days ago [illegible] some comb [illegible] many bees from [illegible] queen bees had gone in – [illegible] saw they [illegible] – [illegible] of very bad [illegible] – Made a [illegible] for [illegible] – [illegible] – The black bees very heavy with brood – Put honey boxes on [illegible] the black bees [illegible] off the [illegible] – [illegible] them off [illegible] had [illegible] [illegible] eggs & [illegible]! [illegible] from Dr Pearce – [illegible] how we [illegible] a piece of comb [illegible] comb [illegible] guide? and made at right angles to the frames? [illegible] guide frames could be used [illegible] comb [illegible] – [illegible] that the [illegible] – very dry and windy – (22) Very dry and windy – [illegible] in Linden [illegible] that another Queen [illegible] left yesterday – had intended to unite it with another but had not time – [illegible] from which I took a [illegible] a few days ago [illegible] – it was [illegible] (number) [illegible] from [illegible] by [illegible] are hatching – colors are not [illegible] – there are some [illegible] the colors may be – Comb of this [illegible] all worker – and very full of brood –

≡ [illegible] 2a

Y

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Journal continued from [illegible]

(June 2d 1860) [illegible]

[illegible] take [illegible] [illegible] [illegible] [illegible] Then [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] the [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] to the [illegible] of their [illegible]! [illegible] the fungi by a stick fresh out of [illegible] – [illegible] [illegible] they [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] – [illegible] Found 4 [illegible]! [illegible] mischief! Found that in my absence the [illegible] queen had gone off with [illegible] of [illegible]! the [illegible] [illegible]

A38

of getting any [illegible] queens so that my [illegible] for three of two [illegible] —
This [illegible] queen has been [illegible] a [illegible] has been [illegible] Z.
the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] the queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] I [illegible]
to [illegible] [illegible] [illegible] [illegible] of [illegible] [illegible] the ~~[illegible]~~ keepers [illegible]
[illegible] [illegible] [illegible] a [illegible] [illegible] queen — [illegible] to be [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] by [illegible] [illegible] [illegible] [illegible] [illegible]
things. Saw the I. Q. queen on Saturday. all right but her colour does
not seem so good as the other best — [illegible] but [illegible] that she came
from Flushing queen No 1. — Bees are filling up with honey — If the
[illegible] are taken away [illegible] the [illegible] just below the comb [illegible]
not [illegible] of the comb are not [illegible] at the top — [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] better [illegible] [illegible] [illegible]
[illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] comb — [illegible] [illegible]
comb and [illegible] [illegible] [illegible] — As far as I can [illegible].
I do not like closed frames the spaces [illegible] too [illegible] [illegible] it
is much more difficult to get the [illegible] [illegible] for removal
[illegible] [illegible] queen cells [illegible] [illegible] [illegible] [illegible] the [illegible] [illegible]
and [illegible] there [illegible] be no [illegible] of [illegible] — (26th) day hot and
dry — Bees working very [illegible] — [illegible] [illegible] on the [illegible] [illegible]
came in — Sudden — perhaps some honey dew — 27 — Hot — windy — Some
clouds — bees not so active as yesterday — Examined [illegible] [illegible] [illegible]
[illegible] from Flushing No 1 [illegible] queen — [illegible] [illegible] [illegible]
[illegible] [illegible] a [illegible] [illegible] queen — but [illegible] more [illegible] than [illegible]
one — her progeny mostly well coloured! the other [illegible] [illegible] [illegible] [illegible]
her progeny [illegible] the [illegible] — [illegible] [illegible] [illegible] by [illegible] [illegible] (B) [illegible]
not be so easy as I thought to determine from progeny the purity of queens
Can now compare progeny of queen from [illegible] Flushing [illegible] [illegible]
~~Flushing~~ — as I have [illegible] from all — (28) I may not I. Q. from Flushing
No 1. (dark) have been impregnated by an [illegible] drone? Some
of her progeny [illegible] black or hybrid — Progeny of a well coloured
queen [illegible] [illegible] — [illegible] to [illegible] to give an Italian queen
to Mr Prince's bees — she was sent from Flushing by [illegible] [illegible]
came safe — Shook bees from comb — removed queen — when they
[illegible] her [illegible] I. Q. in cage — crowded round it — [illegible]

Z [illegible] on the farm

Another Beautiful day — June Monday 3 —
let just happened to go — when requeened the black young — flew down
to bees — hammered her in — put her in cage an hour before Mr Dupont
gave her to them — says they liked her well. If any mistake was made
it was in not sending her to a strange stand — Bees in Dayton
have gathered very little honey — very different from here — 29th Bees
are doing very little now — Comfortably dry — 30th — Eggs of Prof Italian queen
left on the 22 are hatching. Bees from these appear dark. Very hot
and dry — bees gather but little honey now — July 1st Sabbath — Very hot
and very dry — (2nd) Hot and dry. Showers all around us — Bees
for the last few days gather nothing — much inclined to rob. All the
hatching of queen cells has stopped — appear good — (3rd) Very hot — dry —
in the night a very powerful rain — thunder [illegible] 4th Hot showers
all around — 1st Black queen from Italian — has begun to lay —
Took out ten queen cells from the one very Italian (Red — and
clipped was [illegible]) leaving two in each — 5th Rain — much — Saw
three queens hatched — she is absolutely colored — Her mother flew which
was left [illegible] then impregnated by I. drone — (6th) Fed my nuclei — in a
few minutes one black with Ital. Q. and very bees which seem
fine commenced robbing — while all the other blacks are quiet —
this very active — see them at the entrance of the different hives —
an Ital. stung me this P.M. as I was opening the hive — (7th)
Weather is cool and cloudy bees get nothing — An I. Q. hatched last
night — from the eggs of one I got (two weeks ago) to another stock — and
from which came a very black queen — her back being black. Very bad this
This queen quite beautiful but quite as yellow as some I have had
but was to then her mother — which came from one of the pure queens! This
black one and very yellow one — shows that to see a beautiful queen is not
enough to prove about her mother — Had a queen hatched this A.M. from
the eggs of one I got two weeks ago — she looks very yellow like
her mother — all the workers are yellow — she too then had been with an
I drone (very 13th) — It is easy to see how all kinds of mixing can happen
∧ DAO

12th — Bees idle for some days — A queen ~~has~~ hatched from the Ligurian is black — to her mother was not [illegible] purely impregnated — I [illegible] none which were — 13th Two of my nuclei with B.B. (Ligurian) [illegible] of food have paid little attention to these [illegible] for support — 14th [illegible] days ago in taking away [illegible] but kept [illegible] [illegible] — several of them attacked robbers! 15th Three

2 queens came from Flushing — in one box they were all dead or dying — 3 bees alive — queen [illegible] — Queen in the box alive [illegible] a little [illegible] — stings [illegible] [illegible] to [illegible] I gave her better [illegible] — [illegible] queen cage and [illegible] in hive [illegible] — [illegible] appeared [illegible] seem to be a Small stocks raising queens — [illegible] them [illegible] — [illegible] several times and they appear to [illegible] — [illegible] the [illegible] purely impregnated — I [illegible] [illegible] — to what I [illegible] [illegible] to day [illegible] [illegible] Flushing — [illegible] and yet all [illegible] queens — (August 2) I have been [illegible]

Made several attempts to give queen expressed from Flushing to the hive deprived of queen — would not receive her — in giving her back to the nucleus [illegible] !! The nucleus sealed 3 queen cells — one hatched [illegible] — another [illegible] queen [illegible] [illegible] of but little account — Have three colonies with [illegible] queens impregnated by common drones — [illegible] moderate — 3 quite weak — About first of August [illegible] [illegible] of my new colonies had [illegible]

Before [illegible] the [illegible] [illegible] to [illegible] — [illegible] honey — 2 — enough to [illegible] — and 3 [illegible] the [illegible] common bees — The bees in 1 and 2 have all appeared [illegible] colonies for more than [illegible] — Have some [illegible] a few [illegible] off — Until after a rain — had no [illegible] what [illegible] [illegible] — [illegible] by now all gone — ~~[illegible]~~ [illegible] queen in [illegible] — her mother B.B. from Flushing 1st — crossed with a common drone — she was [illegible] — [illegible]

May 4th 1852 — Use zinc for cover over the wooden top —

Many very [illegible] closed [illegible]! (Feb. 23rd 1861) Removed last of stocks [illegible] [illegible] Stock [illegible] Hasting — Both [illegible] in trying to give them to a [illegible] of queens — Before [illegible] given to them I offered them a [illegible] queen, they [illegible] — and [illegible] her away and gave the [illegible] in healthy [illegible] — [illegible] to [illegible] [illegible] — [illegible] bees have been gorged [illegible] out of their combs they [illegible] Still never again after them [illegible] they are gorged — [illegible] taken in the Spring [illegible] — Bees are in good [illegible] but not very [illegible] this Spring — no bee bread yet gathered — [illegible] bees [illegible] of their [illegible] — kept a stock in [illegible] in old box — honey [illegible] — [illegible] stock [illegible] making a candy [illegible] — (27th) 58° — [illegible] on comb in open air — One stock, strong but not the strongest seemed to take more than all the others — Bees get some sweets — (28th) 68° — The stock that took so much flour very [illegible] in honey [illegible] in bee bread! Some sweets gathered — On the 28th saw a queen [illegible] — (March 1st) 72°! Bees found honey in some combs [illegible] in [illegible] — have [illegible] each other with [illegible] to [illegible] — Bee bread brought in — rye flour also taken — some honey — bees at work on rotten apples thrown out — Weather very warm — (2nd) 71° — Bees got honey and bee-bread — (3rd) 67° at 12 m — heavy shower 2 P.M. 47°! (4th) 32° — very raw and windy — (5th) 20° — very windy — (6th) 32° — [illegible] — (7th) 24° — (8th) 50° at noon — very windy — no pollen 34° at 9 P.M. — Snow falling fast — (9th) 26° — very raw, cloudy, day — (10th) 22° — raw, cloudy, snow flurries — (11th) 26° — 40° at 2 P.M. — (12th) 40° at [illegible] — Bees got honey. Saw [illegible] from an [illegible] have been [illegible] than three weeks — [illegible] a [illegible] laying queen. [illegible] got a [illegible] from Dayton [illegible]

same Italian queen to [illegible] in three cages — and then [illegible]
They also [illegible] in them [illegible] — in about two weeks — [illegible]
This P.M. — a queen [illegible] i at Dayton for an full blood Z
Italian — [illegible] for honey — bees were very much disturbed
running as they often do [illegible] the combs — at last saw a
nest of bees confining her on comb! took it off with queen and put
in box — bees [illegible] — [illegible] the bees — queen at length
released but perfectly (?) [illegible] after [illegible]! Same
appearance as the one [illegible] on my [illegible] in [illegible] —
(13th) 42° at 7 A.M. — [illegible] to Dayton — cloudy and cool towards night — [illegible]
[illegible] Mr [illegible] says [illegible] [illegible] any [illegible] of bees —
(14th) Some snow last night — [illegible] flakes to day — little wind but very
raw — 36° at 12 P.M. — Mr [illegible] gave me an Italian queen for one
[illegible] — ([illegible]) — he [illegible] the [illegible] of Mr P[illegible] — [illegible]
but Italian [illegible] to [illegible] — [illegible] only [illegible] leg [illegible]
clear — saw very few Italians in [illegible] hive — [illegible]
that of [illegible] — [illegible] as those in my [illegible] —
[illegible] this [illegible]! [illegible] the [illegible] queen cage
[illegible] distance [illegible] it — [illegible] could be [illegible] — [illegible]
of my [illegible] the [illegible] the bees appear to be [illegible] —
It is [illegible] that this queen was [illegible] by an Italian drone
(15th) It growing very cool — bees did not cluster towards night
much about queen-cage — brought hive into house — set out in A.M.
when thermometer was 40° — at 5½ P.M. 20° — bees clustered much
at 12½ — (about 24 hours from the introduction) removed cork — the
[illegible] went out — bees much excited — In ½ an hour opened queen-
cage — sponge all clean of honey — saw some bees clustered around
two workers — they had killed them — were they those with queen? Saw
queen — bees hummed her in rather more closely than usual — but am
satisfied all right — and this the way to introduce the queens —
Bees out some — but yet no pollen — the weather too cool — (16th)
39° at 7 A.M. — 34° at 1 P.M. — cloudy — bees out some —
(17th) 30° to 34° — with a freezing wind (18th) 7 A.M. +12°
2 P.M. 20° — 4 P.M. 25° 10 P.M. — 22° — 19th — 7 A.M. 15° —
12 M. — 34° — Breeding in some hives almost stopped — Saw
strongest Italian a [illegible] comb in center — Italians appear to
me much more easily excited (21st) 7 A.M. 30° Snow last night

Z and some pollen to day 48° [illegible] cleared off cold — (See [illegible]
Webster [illegible] 7 P.M. 25° — (21) [illegible] night. 7 A.M.
15° — (22nd) 24° at 7. A.M. (2 P.M.) 40° — [illegible] snow — wind strong
from S. W. — (23rd) 42° at 7 A.M. — Rainy in A.M. — cleared and cool
and very windy (24th) 29° to 44° — In P.M. bees flew lively and took
rye flour — got some pollen — first for 3 weeks! (25th) 38° to 55° —
[illegible] by 2 P.M. [illegible] weather — [illegible] from Taylor [illegible]
a few bees out [illegible]
[illegible]
[illegible]
[illegible]
queen back to her colony — she had laid [illegible] eggs in cracked comb — (26th) [illegible]
day rainy — warm [illegible] weather. 27th [illegible] rain — warm weather
[illegible] — cleared off and cool — (28th) 29° at 7 A.M. — [illegible]
bees got [illegible] rye flour — [illegible]
[illegible]
[illegible] — (29th) 54° at 7 A.M. — 70° [illegible]
S. W. wind — At 7 P.M. [illegible] — (30th) 42° — [illegible] cloudy day — not a
bee out — (31) 32° — 50° — [illegible] — bees at work on rye flour —
At 7 P.M. [illegible] rain from S. E. — [illegible]
[illegible] of the night — April (1st) — 45° — too cool and cloudy for bees [illegible]
(2d) [illegible] — bees [illegible] 6 P.M. — 50° — [illegible]
(3d) 32° white frost — 64° — bees active — greedy for rye flour though they got
some pollen — [illegible]
[illegible]
[illegible]
4th 42° — 66° — [illegible] S. E. wind — bees got no pollen — greedy for flour — [illegible]
cells and two under sealed [illegible] — bees [illegible]
5th — 42, 66° — Warm showers — bees got some pollen — perhaps a little
honey — [illegible] (6th) 46° — 52° — much rain — [illegible]
ten days [illegible]
64° — Lovely spring day — bees busy on flour — got some pollen — Pollen this spring [illegible]
the [illegible] — (8th) 50° — 57° — Heavy rain — almost [illegible]
[illegible] — Drains discharge a large volume — (9th) 46°, 58, 42° Rain during the night

Queen [illegible] with [illegible] queen — Saw young bees very freely [illegible] — [illegible]
a perfect [illegible] of pure blood? [illegible] [illegible] Italian stock — [illegible] [illegible] [illegible]
[illegible] eggs and young brood in [illegible] cells — might [illegible] [illegible] [illegible]
nucleus [illegible] hive [illegible] many bees got out [illegible] in the [illegible] — [illegible] them [illegible] [illegible]
dried them [illegible] [illegible] returned all right — Queens might be [illegible] to fly and [illegible]
[illegible] [illegible] — [illegible] [illegible] [illegible] go back — put on [illegible] — [illegible]
[illegible] to [illegible] in [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]
Place to fly — this plan will answer — [illegible] would be best place —
(16th) 42° — Very raw. Saw an Italian on a bush carrying [illegible]
[illegible] [illegible] 56° — Cloudy — wind strong — exceptional [illegible] — [illegible] [illegible]
[illegible] of [illegible]! [illegible] [illegible] for a [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] (17th) Fair cool 44°.. 54° — in a few hours clouds came [illegible] [illegible] S.E.
Bees in [illegible] Italian [illegible] [illegible] [illegible] for pollen — [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] — a few bees
chilled in the [illegible] box — 50° at [illegible] — (18th) 52°.. 64° — Bees got pollen
[illegible] [illegible] [illegible] — [illegible] [illegible] rain [illegible] [illegible] [illegible] — [illegible]
[illegible] — [illegible] — [illegible] queen of nucleus hatched — very [illegible]
[illegible] 24 hours [illegible] [illegible] [illegible] [illegible] 10 days in hatching
[illegible] [illegible] [illegible] [illegible] — Bees [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] of the [illegible] [illegible] — [illegible] a few [illegible] [illegible] —
19th 52° — Rain — clear [illegible] night [illegible] — (20th) 42°.. 54°, [illegible] [illegible]
[illegible] Italian [illegible] in [illegible] [illegible] — too cool for bees — [illegible] [illegible] [illegible]
[illegible] — (21st) 36°.. 54° — [illegible] raw most of the day — at the [illegible]
[illegible] — bees flew briskly — got some honey — the Italians especially [illegible]
busy — ([illegible] [illegible] — better! [illegible] better!!) Wind in S. E.
(16th) 39°.. 50° — Ground frozen — ice in tub did not melt in [illegible] [illegible]
[illegible] clear in [illegible] night cloudy — [illegible] [illegible] — bees greedy for
[illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] — Bees [illegible] [illegible]
over the [illegible] — (17th) 41°.. 56° — tremendous wind from the N. — bees dashed about
[illegible] — Sugar Maple in blossom — plums and peaches — [illegible] [illegible]
maple blossoms [illegible] — Some trees [illegible] — others ([illegible]) [illegible]
[illegible] of [illegible] Island [illegible] [illegible] [illegible] — 32°.. 56° Bees
able to get some honey — greedy for flour yet — 44.. 75° — Beautiful day
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] — bees got [illegible] honey — [illegible] Italians especially active —
22 62°.. 78° Sunshine [illegible] [illegible] saw worms and eggs in [illegible] cells. [illegible]
[illegible] [illegible] [illegible] [illegible] ! In the cold days [illegible] [illegible]
[illegible] [illegible] eggs [illegible] [illegible] [illegible] [illegible] — Bees have got

Drone brood in another [illegible]
much honey — great amount of bee-bread — not a bee drone or [illegible] — Some of the combs appear to be
Z [illegible] from bee-bread — (23) u 54°.. 80° — Very windy but bees gather
[illegible] first — After much labor drummed out [illegible] from those [illegible] hive — hive
[illegible] over two bushels — little many bees in it — saw no drone — gave to the bees
young queen bred from Dayton queen as I saw no queen and concluded that the
[illegible] of a [illegible] unknown — the bees confined her — and in a few
[illegible] I took her [illegible] — put her in cage [illegible]
in the stopper — [illegible]
[illegible] — but [illegible] the bees still confined [illegible] — bees
kept in her cage — [illegible]
hive — this [illegible] — Took all Dayton
queen [illegible]
small one — queen has one claw gone — gave the combs to the bees taken
from the old box — Dandelions appearing — early apples beginning to blossom
pears and cherries in full bloom — (24) Found young queen dead — as soon as
the bees from old box got hived they at once began to work with great
[illegible] — [illegible] in half of a day than for weeks before this — a
heavy shower last night — [illegible] morning — clear cool —
47°.. 60° — very strong N. W. wind — bees [illegible]
bees from old box very active — [illegible]
up — (25th) 40°.. 72° — slight frost in low places — beautiful day for bees —
apple trees in full blossom — [illegible]
[illegible]
Beech nearly ready to blossom — No queens started yet in combs given to the
bees from old box — [illegible] — Saw [illegible] drones in [illegible]
very easy to subdue when honey is plenty — cut out a piece of comb [illegible]
[illegible]
from this queen — She is a very [illegible] queen but not equal to [illegible]
seen in color — her bees appear to be [illegible] colored — (26th) 50°.. 76° — S. W.
wind very strong — bees work well — Carried nucleus to Dr Hills and gave them
[illegible] — (27th) 62°.. 76° to 50° Strong S. W. wind — bees work finely — nucleus at Dr
Hills has five queen cells started — [illegible]
Mr W. Cary — from eggs of his [illegible] queen — has four sealed queens — two combs [illegible]
[illegible] eggs and larvae — I think [illegible]
[illegible]
[illegible] — P. M. — put two of the [illegible] sealed queens in the
colony from old box which had started queen cells — Took up one of the combs

with leave to D Hill — took some of his bees away with their comb having 7 queen cells sealed — and put the Italian bees in their place — Brought the 7 queen cells with young bees home — gave them their liberty — many went to parent stock and were killed — added more bees from parent stock to the nuclei and kept them up — Took out the other comb with Italian larvae and a third [illegible] of the bees — the bees left with the two sealed queens left the combs and showed all the signs of queenlessness! gave them back the comb with the larvae and [illegible] colonel — took away the sealed queens and [illegible] them up with part of the bees — [illegible] in the [illegible] and [illegible] in the [illegible] — which may affect them seriously — [illegible] a very large stock in [illegible] — [illegible] Italian [illegible] [illegible] the stock [illegible] very large [illegible] Ligurian [illegible] [illegible] — the [illegible] [illegible] [illegible] had been the greatest day of the [illegible] — (28th) 44° 64° — [illegible] 12 P.M. Cool night 44°! almost beautiful day — went into the [illegible] [illegible] miles to [illegible] a [illegible] [illegible] — [illegible] tree bees in [illegible] [illegible] [illegible] but I [illegible] could them not to [illegible] (29th) — 40°, 72° [illegible] the Italian queen cells [illegible] — the [illegible] [illegible] is [illegible] two queens — [illegible] for [illegible] — the [illegible] from my [illegible] [illegible] have [illegible] all their queen cells — [illegible] [illegible] two of the Italian sealed queens [illegible] [illegible] — (30th) 46° 62 [illegible] last night — cool and pleasant this [illegible] — yesterday saw bees [illegible] [illegible] in the [illegible] — very plenty [illegible] — just coming into [illegible] — Brought my [illegible] stock in an [illegible] hollow log hive — paid for it $5 and agree to [illegible] in [illegible] with a stock of his, [illegible] Italian queen, and to [illegible] when he comes for me and [illegible] his bees [illegible] — It [illegible] queen [illegible] [illegible] — drone laying stock has a Italian queen [illegible] — [illegible] [illegible] and [illegible] [illegible] Italian [illegible] [illegible] (the [illegible]) [illegible] [illegible] [illegible] — [illegible] pretty [illegible] — but it is [illegible] too cool for the secretion of honey — apple [illegible] [illegible] [illegible] — [illegible] Italian queen given to drone laying stock was [illegible] the cocoon cut — examined it — queen dead and shrivelled — [illegible] — looked at the other two — dead — not near so far advanced — no color but white — I now see why the bees when left with these sealed, never acted as if queenless — [illegible] when queen dead — The [illegible] [illegible] [illegible] [illegible] the [illegible] of the Ligurian queen —

(3) May 1st 40° .. 52° [illegible] [illegible] [illegible] and [illegible] — white frost this [illegible] [illegible] — The drone brood found in a second Italian stock on the 445
23rd are gone and cells filled with honey! cool nights — yesterday two of the

Axioms — Management of Bees —

1st No Queenless stocks to be tolerated — if they cannot be supplied — they must be taken up —

2nd No weak stocks shd be preserved over winter for stock hives — If such colonies cannot be strengthened in time they shd be taken up —

3rd None but hives which afford the bees the most thorough protection against extremes and sudden changes of temperature, and moisture shd be used — they are not worth accepting as a gift

4th No hives which do not give the apiarian a ready control over ~~his hives~~ every comb in a hive shd be used —

5th Doubled or powerful stocks shd alone be relied upon for obtaining surplus honey —

6th The rapid multiplication of colonies shd ever be regarded as standing in our climate in direct opposition to the obtaining the greatest amount of surplus honey — in any given season —

7th The idea that colonies can be multiplied and great profit realized by any but careful apiarians shd be scouted as a snare and a delusion —

8th Strength in the early Spring absolutely necessary to the profitable management of Bees.

cells in Italian nucleus were sealed over to day two in nucleus from my best Italian — the two Italian queen cells small — one Italian queen cell at Dr Kirtlands not sealed over — Dandelion very abundant — bees get some honey — too cool — Danger of severe frost to night (2nd) 30° .. 54° — At 10 P.M. — Last night 39° — Wind in the night shifted from N. W. to N. E. and E — ice in tub at [illegible] — but [illegible] all the day and appear [illegible] In two places sheltered from wind expect to have lost [illegible] — [illegible] some — Queen cell at Dr Kirtlands sealed this [illegible] it is one of the finest I ever saw — Shall watch with much interest to see whether it can produce a better queen than the small ones — Wind E — bright sun — bees have been very busy — Dandelion yielding abundant honey — also [illegible] — clouded over before night and grew a little warmer — Report of damage by frost — (3rd) 42 .. 46° — wind S. E. & began to rain before day — a gentle and genial rain — [illegible] rain fell during the day — In the P.M. — showers with thunder — very dark — a clear sun-set blue sky — and every appearance of clearing up and freezing in the night — clouded over again — saw the [illegible] clouds moving in one direction and the [illegible] in another — a very [illegible] distinct [illegible] 9 P.M. 42° — (4th) 36° .. 56° Strong East wind — In the Italian nucleus I notice two cells — one as large as some queen cells — but being nearly as [illegible] cells — were the queens [illegible] fertile workers — Saw in the one at Dr Kirtlands with Italian comb — four or five such cells! one or two quite as large as the average of queen cells! Shall watch with the greatest interest these cells — one not yet sealed — worm lies deep down in it — not like a workers near the top — Examined best Italian at 2 P.M. (bees busy at work) and found with a little smoke — good supply of sealed drones — [illegible] left when I cut out piece of brood comb for nucleus filled — and abundance of brood and eggs in it — Cut it out again for another nucleus — some new honey sealed over — put comb cut out in nucleus box — removed and shut up an old box hive — to [illegible] returned bees to the nucleus — [illegible] — Shall carry away the old box and beat out any old bees so — get nuclei and have no common drones on my premises — If I have got too many bees for nucleus shall return some before I carry away the hive — Examined hive with Italian Q. from Italy — to [illegible] some sealed drones — 4 sealed queens in drone laying colony — Carried the nucleus just formed to Dr Kirtlands and gave bees their liberty — The day has been too cool and [illegible] honey was secured — 50° at sun-set — wind still East — (5th) 40 .. 60 — Wind strong S. E. — pleasant early — dashes of rain in A.M. — clearing about in P.M. — nucleus taken yesterday to Dr Kirtlands had too few bees — no honey — when I opened to feed they were very stupid — ought to be one comb full of honey or 2 [illegible] — (6th) 50° .. 61°

Rain at 9 A.M. — [illegible] 4 P.M. 52° — steady rain from S.E. — at 5 P.M. — wind changed to S.W. and W. — sun came out — 60° — then heavy clouds and very heavy shower 50° — then very clear and calm 54° — Sun set 60° — To all this the warm clear off for settled spring weather — Saw a bunch of [illegible] — I think that it would be in the [illegible] some time of the [illegible] — of so very [illegible] — Several [illegible] buds — clusters — [illegible] from the leaves — ~~At last~~ After sun set heavy clouds, thunder and some rain. At [illegible] 46° — 11 A.M. — 46° — (7th) 47° .. 60° Wind early S.W. — very strong — kept bees at home — Am afraid that queen cells at Dr Hills got chilled — [illegible] got on their hives — this will be quite a loss — eternal vigilance! Cut out a queen cell from the Italian nucleus at home — and put in the large glass hive whose queen was lost last week when I [illegible] the hive — opened an Italian nucleus a case [illegible] drone like — [illegible] worker — [illegible] plenty of royal jelly in the cell — like queen cell — tasted it — bees greedily devoured it — Took out two queen cells from drone laying stock with Dzierzon Queen comb — opened one saw no jelly in bottom — queen skin white — [illegible] — gave the other to a few shut up bees — they adhered to it well — Tremendous wind — bees very hard blown this A.M. — succumb. to it this P.M. — though much warmer — it [illegible] out of these much honey would have been gathered — Dandelions very plenty and also [illegible] Apple blossoms have hung on well this season — (8th) 47° .. 64° — Italian nucleus with two Q. cells hatching had a living queen this A.M. — her yellow bright as well as [illegible] body from [illegible] — will be very handsome — the other queen dead on the bottom [illegible] [illegible] opened her cell — crammed at sun-set last night — did all I could to [illegible] Cut out large queen cell from White Italian nucleus — gave to hive with Dzierzon Queen comb first taking away all its queen cells — had one [illegible] worker — no jelly in [illegible] of cell — thick cream — no jelly in base of the queen cells opened — Large glass hive had opened royal cell given them from Italian nucleus — I [illegible] it — [illegible] to be [illegible] and [illegible] — must be calmer and more temperate — Bees work splendidly on dandelion — very chilly (9th) 44° .. 74° — bees work well — saw them on [illegible] — [illegible] with a light colored honey — tree all humming — [illegible] bees on it — Dandelion work pretty much all by 11 A.M. — begin to close up — Moved two of [illegible] stocks to O. W. Capp — bought four good stocks of him for $30 — Found in nucleus from last Italian a hatched queen — dark colored — [illegible] — dark too — could see no cell she could come from — Italian large cell opened — found large finely colored queen dead in front of the hive! Gave the hatched queen to a nucleus with no queen — opened two of those sealed cells found [illegible] [illegible] — had drones! Am now satisfied that my last Italian queen ~~[illegible]~~ [illegible] — have no [illegible] queen from Italian nucleus — Saw some hatched drones in my last Italian — has become quite heavy — very few of bees —

Plans &c — In my book I propose to labor those points most which are the most important — and which have been the most unsatisfactorily treated of by other writers —

Mr Cary has not fed his bees — they were not [illegible] for [illegible] [illegible] stores —
I have now sixteen stocks of bees — and none very weak — most quite strong —
(10th) 58°..72 — Cloudy — put J. Q. from my J. stock to [illegible] Cary in the [illegible] [illegible] — gave her in queen cage with some of her bees — Examined [illegible] Italian stock — had increased very much since last examined — [illegible] [illegible] [illegible] [illegible] brood — Every [illegible] they [illegible] [illegible] [illegible] of comb [illegible] [illegible] they [illegible] [illegible] comb up — and then ~~[illegible]~~ combs which [illegible] [illegible] [illegible] [illegible] —
Came off clear after drizzling rain — very strong wind — and yet bees get [illegible] [illegible] — (11th) 52° 58° One [illegible] [illegible] in large glass [illegible] [illegible] [illegible] queen hatched — [illegible] yet closed — Put my last Italian into a hive with a [illegible] [illegible] and [illegible] ([illegible] [illegible] comb) [illegible] [illegible] [illegible] [illegible] queen with [illegible] [illegible] [illegible] ([illegible] [illegible] [illegible] [illegible]) — [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] queen [illegible] [illegible] good looking [illegible] I have had — Rained considerable — cleared up at 4 P.M. — Italians very much more busy than common bees — Moved out the balance of my stock in common hives to Mr Cary's — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] —
Dandelions very abundant [illegible] — [illegible] [illegible] [illegible] has very much injured the [illegible] [illegible]
(12th) 52..56° — Wind S. E. — Cloudy rain all day — [illegible] not working —
(13th) Rain during the night — 56°..74° Wind S. W. — Damp [illegible] [illegible] [illegible] bees working [illegible] — [illegible] [illegible] on [illegible] [illegible] — [illegible] on the [illegible] [illegible] [illegible] not yet expanded — Dandelion bloom very abundant — but bees not [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] little [illegible] than [illegible] [illegible] mine — Examined two Italian stocks — one of them had [illegible] [illegible] [illegible] queen cells — [illegible] [illegible] [illegible] [illegible] [illegible] in them — [illegible] to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] with [illegible] [illegible] — gave them [illegible] [illegible] [illegible] [illegible] [illegible] with — (14th) 48°..64° — [illegible] [illegible] [illegible] [illegible] clear (at 7½) P.M. — bees [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

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Illustrations —

Slanderer — known and despised still attempting to injure — like a bee which has lost its sting still attempts to sting —

Immorality — Bees neglected and suffered to want disposed to steal — tempted by improper exposure of honey — men neglected &c —

Loafing bees — disposed to sting — idle men have time for mischief —

Sting [illegible] like rich men — roll up wealth with care — to get up to a [illegible] like Astors [illegible] thousand dollars — [illegible] in large glass and put it in an [illegible] much as yesterday — Brushed the honey of two rare stocks — [illegible] if the best Ital. is started to return to the great [illegible] given to the hive — [illegible]

Saw some eggs in new comb but none in cells that were out at least half their [illegible] — Plenty of drones — [illegible] where hive [illegible] — they are not [illegible] colored — think [illegible] by [illegible] some [illegible] be [illegible] — they [illegible] to fly [illegible] — [illegible] can take a hive before they [illegible] of [illegible] — [illegible] they fly — [illegible] which [illegible] dark queen from my best Ital. which had one [illegible] — took out 2 cells [illegible] that I [illegible] hope I did not see it [illegible] [illegible] with a cell from my best Ital. [illegible] from St. [illegible] — I [illegible] a queen [illegible] — [illegible] more from my [illegible] to see if they [illegible] be [illegible] — [illegible] all [illegible] colored — (18th) [illegible] 40°. 64° — eggs Eight white frost — perfectly still and [illegible] — [illegible] [illegible] — [illegible] — [illegible] very abundant — Bees [illegible] — (19th) 40° " 63° In my large glass hive the queen cell from my best Ital. open — (yesterday it was [illegible]) [illegible] — larva not yet [illegible] I gave them two from best Ital. [illegible] — one of them [illegible] — The other I [illegible] in the nucleus when I thought it was too late for queen cells to be made — it was sealed [illegible] days later than the others — [illegible] on the 28th — I hatched yesterday — thus 20 days from the egg at the [illegible]! (See Vol. 2. [illegible]) [illegible] queen [illegible] — In putting bees into hive with Mr. [illegible], saw one queen cell on [illegible] of a winter hole — had egg in it — eggs in that comb — notice how when the hive has such a great [illegible] bees [illegible] better at entrance — see it from a distance — this [illegible] — [illegible] many bees in [illegible] weather —

Drones on the wing at 2 P.M. from best Italian — took out my [illegible] queen tied her round the middle with a [illegible] thread — it was too heavy and she could not fly well — by the time got her ready, few drones out — [illegible] — think it best to tie round the middle — drones out from Ital. from queen [illegible] (Hinding) — as good looking as the others — both [illegible] much in color — noticed that drones coming out for first time [illegible] discharged a [illegible] fluid — (faeces?) [illegible] to two nuclei which have had their queen [illegible] — about an inch of brood [illegible] — [illegible] — they have been very cross — acted just as queenless hives when they get a queen — [illegible]

Best Italian has not worked as well as No 2 and 3 — Found [illegible]

Ligurian combs raising queens — two cells — they killed the queen given to them — I am surprised that the great slant gives bees a view of the entrance at a distance — Will it not also make the comb straighter? by causing them to attach it more to back top bar of the frame? If I had had a reliable queen I ought to day to have had several queens impregnated these bees nearly a month — This A.M. bees busy in abundance of honey and pollen — Buckeye will last a few days longer — dandelions very abundant but do not seem to attract bees so much — Boxed hive in large glass and put it in an observing hive — (17th) 37° „ 66° — Quite a white frost — do not think anything was injured. Shall keep cover off of hive with queen to be impregnated — so as to make it easy for her to get out — Found a small Ital. Drone in 3rd hive — the one they came from three feet off — three feet lower — different shape and color. Did they go in because of [illegible], or by mistake do such leave their own hive? Think they [illegible] from No. 2 — she had some Italian color — like the lighter [illegible] — Have been eager to try strong experiment — Supplied this [illegible] the stock in the Ligurian hive — by giving them comb full of sealed brood and larvae — to [illegible] [illegible] in place of comb taken away — fine comb at 9 1/2 o'clock — three [illegible] [illegible] [illegible] — and comb eggs — [illegible] No 2. Ital. [illegible] [illegible] put in at 10 o'clock — strengthened the nuclei — Expect [illegible] Italian to be impregnated to day — Recd at noon a nucleus from Colvin — in fine order — three frames with young larvae & eggs — one had a queen cell started — Gave one comb to two nuclei — and left one in — plenty of bees and they work finely — One of the nuclei strengthened has opened the queen cell — new bees — Is it not [illegible] to [illegible] bees with queen cell lest they [illegible] the need of it — Went to Mr Cary's to get bees for a nucleus — the stock I bought of him last in hives are not strong in bees — the [illegible] had [illegible] a bee light and not [illegible] [illegible] water — Drones from these Ital. not near so good as those from those [illegible] impregnated by black drones — (18th) 42„70 — Nucleus from Cary's had some of the half blood Italians and some black bees — no queen — this A.M. found the Italians had killed all the black bees! Added them to a nucleus that I gave part of the Colvin eggs to — the bees from my best Italian — no contention — Made a very strong nucleus from my best Italian — gave it Colvin brood and moved it to Dr Hill's — nucleus with Colvin queen cells — No 1. — At Dr Hill's No 2 — In [illegible] No 3 — and one with Cary's bees No 4 — At suggestion of Mr Cary I cut long comb to give more chance for queen cells — (19th) 52° „ 76° — Good day for honey — Found that the bees bought from Cary's had a queen — they have destroyed Colvin Q. cells begun — she has laid many eggs — took her [illegible] (20th) 58° „ 48° removed eggs [illegible] those Colvin [illegible] that I thought might yet be changed into queens — Divided the nucleus giving [illegible]

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~~egg of the queen just laid~~ — each larva of Italian queen — Received Italian [illegible] at Dr Hills — A number of beautiful queen cells started where I cut out the square — This may be the way to get many queen cells and larger ones too — Evident from many bees that queen cells are often left for [illegible] purposes — on edges of comb — bottoms &c — Another at home with the [illegible] has been cut has also several started — In one old comb with no brood there were no depositing ^on one side cells being very shallow — queen cells started there though no eggs. Have no fear now but I shall be able to get all the eggs I want — Began to rain yesterday P.M. — much rain fell last night and [illegible] the wind at first S.E. then N.E. and very raw and cold — (21) ^42 u 53° cleared off cold in the night — Pleasant later in A.M. — bees get considerable pollen but not much honey — shall feed some bees — Sun appears — Another about at Dr Hills has four beautiful queen cells — one was sealed this A.M. — cells have been made from large [illegible] with square [illegible] was good. Am satisfied that a want of bee bread has interfered with healthy queen cells — but late [illegible] queens were probably raised in this way — Indeed is [illegible] [illegible] that the larvæ [illegible] plenty — [illegible] of bee bread — Made another No 2 of Dr Hills hive on a small piece of comb with a very few larvæ — and will look out queen [illegible] to be raised — Another at home (very small) has bee bread [illegible] and I saw bees queen cells much earlier than — whether bee bread and others too — The original Italian one has two — one sealed early this A.M. — [illegible] larva [illegible] [illegible] [illegible] than [illegible] — Fed Italian queen with [illegible] [illegible] not make it [illegible] at all — Took out small larva and put them in [illegible] queen cells — [illegible] be [illegible] [illegible] by bees [illegible] some time after it was done — (22) 38 u 70 — White frost — Beautiful day — Wind S.E. — bees get very little honey — am feeding for [illegible] those at home — the 10th hive [illegible] queen — Have now 11 queen cells from Italian [illegible] — for white [illegible] — the [illegible] with the [illegible] Italian Queen put some with hive to see if it [illegible] [illegible] [illegible] [illegible] — Hive with Dayton comb has no queen — saw a few days ago that the cells noticed on the 18th were destroyed — so they did not raise the second queen here — saw a white ~~[illegible]~~ thread-like substance protruding from her — when I killed her some of it came out — part of the [illegible] — This queen was from [illegible] Italian — (23) 40 u 73° — Very pleasant saw bees on some white clover heads — also on [illegible] [illegible] — get very little am feeding some — Brought bees from [illegible] for two nuclei — fed bees here — Old Italian [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] —

24th/ 56°.. 92° = Dandelion and Barberry have been out for some days — at the close of December not enough bright days — then feeding none — Locust a few flying in the [illegible] — very [illegible] that the bees [illegible] very [illegible] — [illegible] a larger [illegible] of Locust than [illegible] — [illegible] these [illegible] [illegible] — [illegible] [illegible] the [illegible] — [illegible] [illegible] will be [illegible] [illegible] —

25th/66.. 82° — Went to [illegible] — Locusts at Hamilton [illegible] [illegible] found — saw old [illegible] [illegible] I [illegible] him 7 years ago — has done well with it — [illegible] a [illegible] — 26th — [illegible] day — [illegible] — 27th [illegible] last night [illegible] — [illegible] — [illegible] 80° = [illegible] to [illegible] stock [illegible] [illegible] queen and [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] bees [illegible] to [illegible] — [illegible] [illegible] [illegible] of [illegible] — Locusts in [illegible] [illegible] — [illegible] [illegible] [illegible] very [illegible]

(28th) 44°..72° without frost — [illegible] up so as to open [illegible] of Locust — but [illegible] needed — bees [illegible] [illegible] [illegible] — [illegible] a [illegible] Removed ~~two~~ [illegible] [illegible] [illegible] to [illegible] [illegible] — gave one of them a [illegible] in [illegible] — (not [illegible] — [illegible] [illegible] [illegible] [illegible]") They were pleased with it — (11 P.M.) Blew smoke into one hive with two [illegible] (one [illegible]) — [illegible] — very few bees [illegible] — [illegible] [illegible] — [illegible] the [illegible] [illegible] — [illegible] [illegible] found a [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible]

(29th — 48°..64° — N.E.! Bees [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] compared with hotter weather — by [illegible] the [illegible] may [illegible] — [illegible] [illegible] [illegible] [illegible] to [illegible] — [illegible] very [illegible] — [illegible] from [illegible] (3) [illegible] [illegible] than the others — Shall aim to make not too many colonies — say about 15 from my 20 stocks Shall let old stocks fill up [illegible] from Locust before making colonies — (11¾ P.M.) Have been sitting up to [illegible] [illegible] hatched queen from [illegible] [illegible] [illegible] [illegible] (the [illegible] to cut [illegible]) — and have just taken out [illegible] and put her in a queen cage with a few [illegible] [illegible] [illegible] 1/4 of an hour in [illegible] her — [illegible] [illegible] — [illegible] [illegible] the [illegible]! — [illegible] [illegible] by night or by day — [illegible] [illegible] [illegible] — [illegible] the queen is a very beautiful one — (30th) 12¾ A.M. — Have just given the hatched queen to stock No (4) — [illegible] — and removed sealed queens with them [illegible] — 9½ A.M. — the [illegible] and [illegible] queen has hatched — very large (her cell extra large) and very yellow [illegible] 3d of 2 [illegible] — Gave her to a stock with [illegible] sealed [illegible] [illegible] a little but [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]

42°..64° — Bees [illegible] on [illegible] — [illegible] Locust in P.M. — [illegible] for Locust — (31st) 45°.. 82 — Wind [illegible] E — to [illegible] S — [illegible] 3 Dec. 9 a

Jan.y 29th. 1852 — To day temperature 52° — Bright sun-shine — Bees in one of my flattest hives brought in bee bread of a red color — this hive has a bright sunny exposure — but it had no extra covering — it contained a small artificial swarm — They have ~~done~~ wintered most admirably — I shall try to encourage them in early breeding — and test the advantage of a S exposure to the sun — A hive to day well protected and in the shade did not fly at all.

Feb.y 2 — The flat hive has been fed to encourage comb building and breeding — and very well covered as the weather has changed to cold — I notice that the bees have commenced ventilating at the entrance — Query does not comb building deteriorate the air of the hive — as well as increase its heat — and thus cause a necessity for ventilation which does not exist when the bees are inactive —

Feb. 5th — Opened my flat hive and found that a great many cells contained young worms — The bees to day brought in some bee bread — I should think from the red maple — A hive well protected did not fly — until some of the covering was removed — this shows how these hives will keep the bees quiet when the ground is covered with snow — and it is not desirable to have them leave their hives — it also supports my view that such hives ought to have their covers taken off in early spring on sun-shiny days to encourage early breeding — no danger in this as the hives are covered again before night —

Feb. 10th — Separated a part of a swarm with a divider — 11th — To day they appear sensible of their calamity — 13th — To day I find two royal cells started — 14th They have advanced since yesterday — weather cold and snowy — (16th) I find four royal cells — but they are all tenantless — I allowed them to go back to the parent swarm — shall resume the experiment when the bees can gather abroad — The part separated had only new comb without bee bread — Feb.y 23rd — The bees in my experimental hive have reared no new brood — there is no bee bread in the hive — it being a late artificial swarm of last season — I examined closely to day but find no eggs — I have given them a lot of bee bread taken from another hive — 24th — They have taken nearly all their bee bread — the Queen has laid a multitude of eggs — they have taken a great quantity of water from their feeder — which they had neglected before — Have again separated them to raise new Queens — 25th — A Queen reared last Summer artificially which died examined to day — found her too much dried to determine anything — spermatheca — full of sperm.
26th — Royal cells begun — 27 — Continued — 28 — Continued —

March 1st of six only one contains a worm – 2d Still progressing – A little bee bread
has been gathered for the last week – 3d – Weather very cold – worm dead – the bees returned –
No new egg laying observed – for want of bee bread – 4th – Violent snow storm
March 9th – Weather uncommonly fine – Bees gathered a vast amount of bee bread –
Feeble colony set in place of a strong one – strong one shut up – sufficient bees caught
to reinforce feeble one – sent away from city – March 10th – March 13 Weather well
Opened to day a hive with goodly number of bees – but one which had
no supplies of pollen – found no brood – but fresh pollen of the last
two days – Several examinations this spring have demonstrated necessity of
pollen for early breeding – Took out Queen of this hive on a frame – bees
unusually disturbed – flew about – rushed in masses over comb as they
are wont to do when Queen lost – March 15th – Found a royal cell begun
in 1 hive!!! no worm in it – Queen present!!! They were so thoroughly frightened
that they did not believe in her presence – March 17th – A small swarm apparently
Queenless – kept guard – attacked intruders – drag out dead & lay in no pollen –
March 18th – 19. 20. 21 – Weather very cold – Therm 22° – Bees not able to go out
for water – wonderful quantity of water they consume in their feeders –
22, 23, 24, 25 – Weather quite cold – no bee bread gathered for some time – Bees
going for water have been so chilled as to be unable to return – 26 – Quite warm – bee
bread gathered – Took out the combs from a hive and converted bars into frames –
bees very peaceable – clipped wings of Queen – found a large royal cell – old – in
a [illegible] of last year – 27 – Weather very stormy – 28 – Cool – 29 – Stormy – 30, 31 – Do –
April 1st clear – Hive on which I have been experimenting [illegible] – 2d – Royal cells begun five –
5th Only two contain worms – Weather exceedingly cold – 5 or 6 inches snow – snow – hail
and rain all day – 8 P.M. – Thermtr ~~33+~~ 33+ Lightning!! loud thunder!
6th – Snow – 32° – But ~~one royal cell continued – that nearly sealed over~~ Two cells sealed over – (7th) Still cold –
8. Royal cells taken from bees – fertile Queen given – closely hemmed in at first –
was given before both cells removed – the last not seen at first – doubtful whether
she is alive – (8th) She is alive and well. Put a small lot of bees on the comb
with sealed Queen – They at once clustered on it – and will develope it – they
good – [illegible] – N. E. Storm – 13 days since a warm day – thermtr 35° – in the evening
snow and rain – April 9th – Therm 36+ Ground white with snow – clear but cool –

In hives without pollen no eggs or young worms – Can a substitute be found – its importance is evidently obvious – 10th – Ther. 36° – ice in the country round – Begins to be warmer – Apricots in very warm and sheltered places just begin to blossom – 11th – A little warmer – rain – wind N. E. 12th – Rain Wind N. E. – very raw – 13 – Clear – warmer – 12th. No eggs in hive cleared – no bee bread – gave them eggs bee bread – 13th To day found eggs in cells – I consider it proved that pollen is absolutely necessary as that no eggs laid in cells without it – 14th – Much warmer – some rain – bees most vigorously engaged in bringing in bee bread and honey from the Apricot – 15th – Powerful rain during greater night – rainy morning – cleared up N. W. – cooler – no bees at work – grass looking very promising – 16th – Clear – and warmer – bees abundantly ~~bees~~ gathering from the Apricot 17 – Warm A.M. – cloudy towards noon – cool at night – wind N. E. 18 – Very raw – penetrating N. E. wind – at night snow & rain 19th – Wind still N. E. – very raw – Ther. 42° – very powerful wind. 20th – Wind still N. E. – rainy – blowing – Thermometer 40° Bees can do nothing at 21 – Much rain last night – wind changed to N. W. – blowing strong – Therm 38 – rainy day Tuesday and evening – bees out at noon after water – Swarms in well protected hives with plenty of water honey and bee bread do not lose much such weather – they keep the combs more clean for young – 22 – Wind N. W. – still cloudy and windy – but warmer Ther. 44° – Bees out much at noon – Took Queen from a full hive – gave ~~her~~ her to hive with none – well received – the bees were doing nothing but in a few minutes were busily at work – Hive without her began to complain – loud – sad humming – (23rd) Ther. 44° – Wind N. W. – very windy – cool – spits of rain – some hail – bees scarcely stir out – Examined hive into which Queen was put – found that she had laid a very large number of eggs idea of one or two hundred a day nonsense – I find that the bees when they come out discharge their feces – have been confined by weather – 8 P.M. – Thermometer 42° – Sun has shone but very little – This A.M. – bees deprived of their Queen thought to be quiet – If they have the means of raising up – disquiet of short continuance – 24th – Thermometer 38° – N. W. – cold – angry clouds – softened towards evening – bees scarcely stir out – 25th – Cloudy – but warmer – P.M. – clear – pleasant – bees busily at work in the willows – weeping and curled within their basket –

26th— Quite warm— bees did a power of work— A stray swarm lit on my premises— Hived them with a weak one— returned Queen— found numerous Queen cells under way— In ye eveg a thunder shower— rained much during the night—

27th— Wind N. W.— cold clear up— windy clouds with much wind— bees did nothing— Found Queen of emigrant hive— dropped her and lost her— bees towards noon swarmed out and entered the different hives— but few were killed— Yesterday Queen was returned to her hive— to day royal cells discontinued— Attempted to introduce a Queen to a hive which I feared might be Queenless— They knotted upon her to destroy her— was convinced that they had a Queen— Hive deserted by Queen had eggs— An empty hive last year deserted had eggs and young— (28th) Thermometer 40°— Wind N. W.— windy— and cool— bees gathering considerably from the willows— Noticed the effect of a fence that protects bees from wind in encouraging them to work— (29th) Thermometer 46°— wind S. W.— pleasant— bees working finely— Cherries beginning to show blossoms— 30th— Thermometer 50°— cloudy till noon— bees then worked smartly— rainy P.M.— thunder showers during evening—

1st May— Cloudy A.M.— Wind N. E.— fair and very pleasant in the P.M.— bees working wonderfully— 2. May— wind N. W.— cloudy and cool— bees working comfortably— 3. May Very pleasant and much warmer— bees working extremely well— Wind N. W.— 4th— Ther. 40°+ Wind N.— very cool until noon— bees did scarcely anything in the A.M. worked well in the P.M.— ~~drone~~ imperfect drone hatched— May 5th— Thermometer 40°+ Wind S. W.— warm and pleasant afterwards— Moved a swarm of last year to Cuthill— Half an hour after they had their liberty saw them flying back bee bread— in about an hour were working as well as though they had always been there— May 6th— Quite warm— bees most vigorously at work— Dr Brainards bees at work in the upper box with frames— the box in one of my hives was put on too late— saw royal cells indicating intention to swarm— Made an Ar. Swarm— gave comb with eggs, young &c and some other combs— put in place of an old stock— in a short time all were satisfied and bees worked with vigor— May 7th— A. S.— have done nothing towards raising a Queen— but work with great vigor— Gave them a Queen from another hive— Weather summer like— bees working on the blossoms of trees with great vigor— 8th— Hive from which Queen taken rearing others— Summer weather— Apple and Pear trees in full bloom— 9th— Summer weather— 10th— Showery A.M. Clear and warm P.M.— Dandelions at their height— Apple blossoms most superb— Hive from which Queen taken began royal cells in the new comb— but there was no worms in them— Queen taken from A. S. and returned— Stock moved to another— A. S.— almost recovered from the move—

May 11th – 1852} Weather summer like – bees still upon the blossoms – Queenless hive constructing
a royal cell – Killed many diseased bees – Used a hive being robbed without being conscious of it –
have noticed same before – May 12th} Powerful rain last night – and this A.M. – cloudy all
day – bees doing nothing – Ran a divider into a hive at the [illegible] – Have seen no drones
on the wing – 13th – Warm – fair – 14th – A.M. cloudy – P.M. splendid – 15th Rain – N.E.
16th – ~~N.E. – cool – cloudy~~ A.M. cloudy – P.M. beautiful – 17th – A hive looked like
swarming – afterwards went to work – gust came up in P.M. – 18th Clear – cool –
made an experiment by moving two to catch up – removed about 2/3 of a mile
placed others on their spot – 19th – Found royal cells in A.S. – worked down –
three capped are just like drones!!! – Am sure they were worker cells with
eggs – cannot imagine the cause – noticed a few days ago that the bees were
in a state of great agitation – after that the royal cells seemed to be cut down
gave them other comb containing eggs – weather cool rain in the evening –
bees working but little – 20th – Wind N.W. – raw – cloudy – bees work but little –
21st – Wind S.W. – clear – warmer – bees find but little to gather from – The caught up
stock moved only half a mile work well – do not think many went back – Saw to day
hives which had no bottom board during the winter – they were well stocked with bees –
22d – Warm – pleasant – 23rd – Warm – showery – 24 – Found a sealed royal cell in
the one which had capped cells with drone capping – Hive at home deprived of Queen
10 days ago had started about a dozen royal cells – only one contained a worm that
was sealed – took it and restored their Queen – many beautiful swarms – fine
prospects for a rich honey harvest – 25th – very warm – found two more royal cells
in A.S. – 26th – Found it very difficult to get bees to enter hive put in their place
which is of a different color – hives should be all perfectly alike – 27th – Raining very –
swarm of yesterday bought to be hived – received 10 dolls – for hive and right –
first prints – 28th – Bees deserted hive – put back – Queen's wings clipped – think
the smell of paint was the cause – Examined one of the Queens as I thought –
which had a drone capping – it was a true Queen – put several sealed Queens
into my nursery – Bees work finely on raspberries – 29 – Cloudy – Had swarms –
bees working powerfully on raspberries – beginning on tulips – Found worker
eggs and drone eggs – of same age – mixed semen of drones in water – poured
it into cells of drone eggs – Made two swarms – put comb with brood
and set in place of old stock – expelled Queen and all the bees
from a hive and put them in another on same spot – put empty comb
in a hive on the spot of another stock – both worked very well –

May 30th – Bees working on the tulip – had a fine swarm at 9 A.M.
2½ – The new swarms that work most powerfully – and the old stock work
better after swarming – 31st – Had another good swarm at 1½ P.M. – weather
fair but rather cool – Saw a Queen entering among the very first into
a new hive – My old stocks moved work uncommonly well – If others
when moved do as well the system of moving will work most admirably – Saw
a Queen on the old box from which bees were shaken when nearly all the
swarm had entered the new hive – June 1st – Caught Queen when putting
swarm into hive – kept her until nearly all in – they had not missed
her – Caught a Queen leaving the hive with a swarm a large
part of the hive had left before she left – the bees refused to light
put her on a twig of a small evergreen – a very few bees saw
her – did not surround her but flew right off – in a few moments the
swarm came to this spot and clustered around her – her wings had
been clipped and the swarm put in 1 A.M. – too much light and heat –
June 2nd – Very warm – bees working most ~~power~~fully on the tulip &c –
Four swarms just put into hives in my apiary left – too much light
and heat – hives ought to be dark and well ventilated – kept dark until
the bees have begun to work well – In hives which control the bees to work
contrary to their instincts too much care cannot be taken to prevent them from
leaving the hive – June 3rd – Obsy very full swarmed out yesterday and again
to day – each time returning – Found Queen-cells started in one observatory
which swarmed out and lost its Queen – Windy and very hot – one hive
swarmed – lit on an old thistle stalk on the ground – Caught Queen
and clipped her wings – Made a swarm by moving – Tremendous thunder
storm – powerful wind – rain – and hail – June 4th – Quite rainy –
Had two swarms brought died for want of sufficient air – Hard
teacher this same experience – Saw bees uneasy in one Obsy without
Queen – gave them cells containing eggs in tumblers – all right soon –
5th – Saved Queen of one smothered hive with sufficient for a nucleus –
Found many of the bees alive but with bodies distended with the
same filthy substance as when they have dysentery in spring from damp
foul hives – interesting as showing cause of the disease – Weather dull –
6th – Fair – bees working prodigiously – but little lost by a rainy day – comb made
and the more honey gathered the next day –

7th— Very windy— bees working well— but few swarms this season— hives have
become very heavy— 8th Powerful wind— bees working much— Windy a
very windy day bad to form A. S.— Bees in one of my Observing came out for the
4th time— double glass in them keep them too warm— they evidently do not at
first like so much light— 9th Very rainy— a hive has been piping for second
swarm for four days— weather has not permit them to come out— Yesterday
convinced me that when hives are unlike and near making A. S.— by moving
will be attended with considerable difficulty— 9th Very windy— cool—
weather has been good for honey getting— but very bad for swarms— have had
piping in a hive since last Saturday— and bees have not yet come out—
tried a new proof of being able to make bees cluster by putting their Queen
on a bough of a tree— Found a hatched Queen in my Italy moved off some
distance— A handful of bees have three young Queens— started— two sealed today
saw the whole process of swarm in an Obsy hive— bees very inactive— some
time before they came out they had taken honey from the cells— began to be
greatly agitated— [illegible] running in circles— increased— a few flew out and
then back— soon rushed to the entrance— 10th Piping bees did come out yesterday
found them this A.M.— on a fence— hived them— young Queen several times took
wing— they are far more disposed to do so than old ones— A few hours
after they were hived— they were in great distress— made same noise as when
Queen lost— believe that she went out to be with the drones— in about half
an hour all calmed down again— Put about a Quart of them in a
hive with frame containing eggs— they went to work as though all was right
Put a frame containing eggs with bees into a hive to shut up for a few
days to form a nucleus— Weather very cool and wonderfully windy— but
very little natural swarming— heard piping in the hive wh. has thrown two
swarms— 11th Swarm abandoned Observing— they have not worked for
the last two days— Queen did not move over the comb to lay eggs—
More than two hours before they swarmed observed them in the cells eating
out the honey— a short time before they came out saw the Queen
walking over the comb— not like a satisfied Queen— but few bees
had flown out— those mostly played about— noticed some in a
tumbler on the top of the hive to be the first to try to leave— hived
them in a practical hive— both this and another swarm wh. decamped
under the same circumstances— worked with prodigious zeal as soon as they

were established in a hive to their mind — If bees do not work in a hive in
which they have been placed — it is a pretty sure sign that they mean to leave —
Weather still cool for the season — Failed in an attempt to form an A. S. —
by setting hive with comb in place of old stock — perhaps they had no young —
Bees stick adhere to the new comb in the hive before which they were shaken —
If nuclei can be formed to rear Q. when they are sealed is the time
to form A. S. — 12th — Had a second swarm — another swarm abandoned
my dry hive — it was a first swarm — a few returned — gave them
comb and they are rearing Queens — no second swarm had yet left —
they are not so much afraid of the light — Formed two other
nuclei — only one adhered — Examined the nucleus first formed — they are
engaged in rearing Queens — This plan will answer — 13th — Quite warm
Had a third swarm from the hive wh. swarmed yesterday — in hiving the
bees day before a part returned — 14th — Had a first swarm — heard
piping in the hive which had swarmed three times — Found royal cells
started in my shut up nucleus — I call this the nucleus system —
15th — Exceedingly hot — shut up nucleus dispersed — no cover was on the hive
and all circumstances were unfavorable — Have found 12 sealed Queens
rear artificially in one colony* — Second swarm of 10th: Queen I saw ovipositing
this P.M. — ~~Third~~ Second swarm's Queen I saw come out to be with the
drones — the bees while she was out of the hive were very much agitated —
rushed about as though they were swarming — Formed four shut up nuclei
by taking brood comb — and catching up bees wh. were lying on the ~~outside~~
outside of hives — Am beginning to be satisfied that bees can transport eggs or
young worms into royal cells — 16th — Exceedingly hot — clover at its height — One
of yesterdays nuclei — accidentally had its liberty — bees adhered — the others have
not succeeded — Found hive wh. was without Queen (taken from "Kerr") with four
frames with Queen cells started — Have used them for nuclei — to have their liberty —
Transferred maturing brood to a second swarm — Formed for the first time a swarm from
one of my nuclei — with Queen nearly sealed — by moving an old stock — worked most
admirably — Had a 4th swarm — 3rd came ~~on Sunday~~ day before yesterday — after the
swarm came out — heard piping — saw Queen ~~near~~ on the alighting board —
17th — Exceedingly hot — shower in evening — had a strong first swarm — Cut
out sealed Queens from a [illegible] which had thirteen (13)!! Put them

* This colony swarmed when another hive was swarming — although the Queens were in embryo

in a piece of comb on a frame - set in place of moved stock - worked most admirably - found my yesterdays nuclei failed - hives were too hot - Tried to form two with brood comb and bees from the natural swarm - both failed - think that the comb ought to contain worms a day or so old - Tried to keep a lot wh. came back after the swarm alighted in up glass with the comb from wh. I tried to form the nucleus from the natural swarm they would not accept it - they did accept a sealed Queen - Found the bees in moved stocks to fly and work well same day they were removed - Bees are most rapidly filling up their hives with honey - When no hive like their own and unlike the new one stand near where moved stock stood find but little difficulty in making A.S. - Found a large quantity of royal jelly at bottom of cell containing an unhatched Queen - Looked like Quince jelly - tasted like Jujube paste a little - Found a hatched Queen she came out last night - one near her was killed in its cell - wh. was opened on the side - Queen cells differ very much in size - found some drones in cells of workers - scattered here and there - have in several instances found the same - capped like drones - though in worker cells - 18th - Showery - found out that the middle piece of my frame makes comb irregular!! best like to build comb from front to rear in one piece - heard call of A.Q. - became somewhat like bees' roar at first - 19th Very hot - Only hive lost Queen - rushed about like panting on comb - came out like Swarm - were filled with honey - made at first singing noise - Formed two nuclei wh. seem to be doing well one from bees taken f. a Nat. S. - other by using a comb with brood, bees and all - tried three others wh. failed - bees from Nat. S. - had not all gone in - threw in nuclei beat them on wing and joined them - This must be done early in A.M. - or towards evening - before when bees will not take wing - Caught two imprisoned Queens - bees seem to imprison young Queens to prevent them from going out - Find that to form a swarm by many there shd be bees adhering to comb - Showers in the evening - 20th - Quite hot - bees working well in clover - 21st - One of divisions with a young Queen has swarmed out several times and then returned - 22nd - Found most of the cooped up swarms with sealed Queens have succeeded - Hives wh. have been often moved - seem unwilling to desert the hive - they seek for their own hive and most of them find it again - Noticed again bees attempting to prevent young Queens from leaving the hive - by stopping them - Found 12 sealed Queens on one comb!!! Found a Queen hatched wh. was light like any other young hatched bee – another has been piping now for four days and is not hatched out yet. – Bees with unhatched Queen more cross than others –

June 23d – Weather quite cool – bees in such weather gather but little from the white clover – Made a new colony by shaking out bees in front of a hive where there stood – and putting their combs in place of a moved stock – Made five by lifting out half of the combs with their bees into another hive – and dividing space between the two – gave the part without a Queen a sealed young one – Saw some drones here and there in worker comb in wh. no A. Q. were rearing – bees do not seem to do much in my observatories – June 24th – Cool – cloudy – New hives formed are doing well – (25th) Windy – cool – 26th – Warmer – Bees do not seem to work so well on the white clover although it is quite abundant – 27th – Hot – bees still do not seem to be doing much work on white clover – 28th – Find to my very great disappointment that many of my small colonies which had young Queens seem to have none – were they lost in their excursions to meet the drones? or did they leave from discouragement? Have I been careful enough to keep the hives so situated that they will be pretty sure to find them on their return? Bees in my observatories do not seem to be getting along well –

29th – Cloudy – Bees do a little more on the clover – Found yesterday a Queen hatched with ~~an~~ imperfect wings – Put an unimpregnated Queen to a hive raising young Queens – the first bee that touched her stung her so that she soon died!! Drummed out four colonies – they were in old hives which had very properly been moved to catch swarms – and yet they were prodigiously full of bees – after drumming some few minutes until bees had time to fill themselves canted the empty hive to an angle of 45° – got nearly all the bees out of each hive – they were very numerous – in one instance the Queen was among the last to go up – Put the old hives in place of another old moved stock – in one instance at least found the others bees attacking the old hive – had to take it away – Of all plans for increasing this is one of the very best – easy in my hives – Powerful number of drones in some of these old hives – Notice the building of only drone comb in hives without a Queen – Multiplication of ~~bees~~ colonies ought to cease about the time that drones are being killed off – Colonies raising Queens ought not to be allowed to build comb – hive this to be full of comb – if bees are numerous – In all he may have had but little quarreling until within the last few days – when bees were gathering from the tulip tree cd scarcely get them to notice comb with honey – now they are eager for it – Must be more careful to guard against robbing –

30th— Very warm—P.M.— slight shower— Moved the hive wh. was being robbed
about half a mile— All the operations of yesterday seem to have been
successful— Drove out four more colonies in each instance found the
Queen— sometimes she went up very soon— at others lingered among the
last— Put part of one swarm into an empty hive— put the balance without
their Queen into the hive they came from— The mass of those put into the
empty hive adhere— darkened it— and shall keep it dark for some days—
After driving one put the mass of the bees with Queen into a new hive—
on a new spot— others back to their old hive to raise a Queen— After
driving another carried the mass with Queen half a mile off— put the rest
back on the old spot— A Queen wh. I kept for a long time in my
closed hand bit me quite hard— she was so intent on this that when
I opened my hand she did not desist— July 1st— Very warm— bees work
much better on the clover— seem to be at work on the Bass wood— Have driven
two more colonies— find bees very much disposed to rob the old hive
from wh. the great mass of the bees have been driven— Find to my exceedingly
great delight that my small colonies made by moving and giving sealed Queen
have not lost their Queens— Eleven out of 12 have succeeded— Found a
Queen with less than two dozen bees around her— Put bees from a driven
swarm to four hives with comb containing eggs of workers— two to be
left on my own Apiary— two to be moved half a mile— find that when
bees are shaken down they shd. be sprinkled if we wish to prevent them from
taking wing— find the efficacy of my blocks in preventing robbing— saw drones in a
glass hive wh. was driven feeding themselves like the others before they ascended—
July 2nd— cool and windy— bees almost entirely idle— Have found another Queen with
a handful laying— The nucleus system can be made to answer— The bees in the four
nuclei of yesterday having their liberty all dispersed— Must be moved or confined—
or bought from a distant colony to [illegible]— Formed 5 nuclei by shutting
up with board— July 3rd— Bees work a little better— Found drone comb in a
small colony— they were Queenless— Queen was hurt in hiving— she laid
no eggs— and yet they were exceedingly industrious in working— comb nearly all
drone comb— had built the beginnings of royal cells— altho' they had no eggs—
gave them worker brood in tumbler which they most joyfully accepted—
July 4th— Sabbath— July 5th— Drove several colonies with success— found
a Queen with defect— leg— it was withered— had one like it last year—

July 6th – Hot – sticky weather – shower late in P.M. – bees have worked most admirably – clover still good – Linden in full blossom – My shut up nuclei had their liberty – they had begun royal cells but suffered for want of air – no worms in royal cells – the plan with proper precautions will answer – found the bees indisposed to leave the hives – showing that they were adhered – Formed a number of hives with sealed royal cells – by moving and catching up – most of them appear to have succeeded – Bees adhering to the comb wonderfully and in the catching up process – Put a laying Queen into an empty hive on a comb – put it in place of a moved stock – did not seem to answer any better – the swarm came out of the hive – gave her to a colony rearing A.Q. – Found drone comb scattered among worker brood of a colony rearing an A.Q. – this does seem to be common – Can it be that drone eggs a few are laid in the worker comb – and that bees rearing A.Q. – raise them while others do not? A colony swarmed yesterday – Queen had been put into one wh. had lost their Queen – she was taken from a common hive – thought that she was lost soon after she was given – because bees built royal cells – the sealed ones 9 – almost all the bees left in the swarm – Queen taken away and bees put back – the small colony and the Queen with imperfect wings disturbed to day – Queen gone – Some of the colonies begin to attack the drones – In moving to catch up – bees seem to go often into the adjoining hives – have had no quarrels – but when a ~~hive~~ second swarm left and tried to enter an old colony – they killed them all at once – Is it true that colonies having Queens in different conditions – (impregnated and not) are more apt to quarrel? Find my comb for the most part very straight – when honey is in great profusion bees build more coarse comb – and more irregular comb – (7th) Clear hot – bees still work well – Hives formed by catching up with sealed royal cells – do not appear to have made anything of the Queen – gave them brood comb from wh. they are rearing Queens – Do they not destroy sealed Queen if they are confined? ought she not to be given when they begin to rear young Queens – Still notice drones in worker comb where I am rearing A.Q. – Found hives wh. had been deprived of comb well filled again with comb and advancing brood – taking away comb much better than to divide up so as to weaken and stop comb building – 8th Hot dry – 9th Do – 10th Do – 11th Do – 12th Do – absent some days from my Apiary – 13th Fine shower – clover still tolerably abundant – Sealed Queens given to Nuclei have hatched – Have formed a number of Nuclei – appear to be all doing well – some young Queens a good while before they ~~had~~ commence laying – Have daily increasing evidence that it is not a good plan to weaken hives by dividing – and that if a few combs only are taken from time to time they are only weakened in honey and not in brood –

19th— Last week much rain— There is little white clover— but no sweetness in it— Some Swarms are in want of honey— bees must now be fed to make comb and gain any strength— are much disposed to rob— Nuclei formed from comb with eggs and hatching bees are raising Queens— Have reason to fear that I have pushed the multiplica° of colonies too far without resorting to feeding— Saw eggs in a hive from which I had taken their Queen— looks as tho' a fertile worker laid them— Opening a hive found two Queens clinched in contest & a worker was engaged with them— separated them— both Queens appeared unhurt— think that a young Queen mistook her hive— Have found worms in a number of the hives— can easily rout them out— have had so very many weak hives— that I could expect nothing else— Am now satisfied that the Nucleus plan will work— and that the whole system of managing with the frames will answer— and am more than ever convinced that rapid multiplica° is not to be aimed at unless under peculiar circumstances— 20th— Found some colonies actually on the verge of starvation— Find my plan of feeding in the bottom of the hives seems to answer thus far well— ~~Took~~ Drove a powerful old box hive— the hive was an exceedingly large one— had a power of brood— and honey— The old Queen with a large part of the colony had been driven out some time before— Evidence of the amazing fertility of a Queen when she has a chance of doing what she can— Must not feed out of doors unless I wish to feed my neighbors bees— Can see that it will take a great amount of honey to put my bees into the right condition— Comb building and rearing of young bees the objects to be accomplished by feeding at present— If bees are plenty and I can have Buckwheat they will then get their supplies— May find it best to move them to such supplies if they are not near— Find that the old comb can be put with exceeding ease into my frames— and with but very little loss of brood— 27th— Have found a number of the late formed Nuclei Queenless— Have pushed multiplica° of colonies altogether too far— Have not found worms much except in the combs— and generally in the small Queenless stocks— Found in one comb a large number of young bees unable to leave their cells because of the webs of the worms— the unhatched Queen had been destroyed by the worms— The bees did not appear injured but tangled up— A large colony which had not been disturbed for some time was found Queenless and had 7 unsealed Queens— This shows that Queens may die and yet eggs be left— Do they not generally die very suddenly? Bees get bee bread from the Indian corn tassel—

Have had seasonable rains — (30th) Found that one of my hives was very inactive — no bee heard — or scarcely any gathered when others actively gathering — Opened it and found many worms in it — they were webbed up between frames and bottom board — found it exceedingly easy to remove them — As soon as I perceive idlers about a hive from time to time I suspect that something is wrong within — (31st) Have taken up several of my last formed nuclei — the season having been very bad I have attempted to multiply too much — the feeble colonies are infested with worms — these lodge themselves very much in combs containing brood as they are able to conceal themselves there — the young are often so entangled in their webs that they cannot extricate themselves from the cells — I have neglected feeding too late — The season at first was favorable — but taken as a whole has been very poor indeed — Several Queenless hives rejected a fertile Queen offered to them — (August 2) Have had several starved small swarms visit my premises — Some of my small ones have abandoned their hives — Shall never again attempt to form nuclei late in the season — they ought to be formed early in June — and so strengthened as to be in good condition before the honey harvest is over — (11th) Plenty of white clover still but no honey to be got — Too rapid multiplica° entails too much labor in feeding strengthening — guarding &c Am desperately opposed to it from its results thus far — If I had had numerous powerful colonies to strengthen my weak ones from it would have answered better — Found a young Queen laying only drone eggs — the drone brood were laid in worker cells — covered over with drone caps — dwarfed in size — shall have her dissected — dissec.° of Queen proved that she was not impregnated August 17th — A very small swarm came to my premises — 18th One of my small swarms deserted its hive — the Queen's wings being clipped she was lost and they returned to the hive — Shall unite my small swarms and feed them up — Caught worms in a feeble swarm between the bottom board and the frames — 19th Uniting the small swarm with another Queen was killed by them and they set out to rear another — started four or five — 25th Drones are still to be found in the Apiary in some hives in considerable numbers especially in my strong hives — Found a young Queen with the male organ protruding from her body — tried to pull it out but could not without exerting too much force — Buck-wheat fields in full blossom — bees begin to gather from it — Borage still continues to blossom fine — Sep. 2nd — Found a Queen had hatched in a hive which was rearing Artificial Queens — Found several royal cells almost destroyed — the bees were gnawing at one to destroy it — (Sep. 3rd) Found some honey stored up now by the strong stocks —

Sep. 10th – Circumstances prevented me from strengthening and feeding my small colonies and as the season has been an exceedingly unfavorable one – I am now breaking up many of them – To day several swarmed out and went to other hives – they appear to be perfectly sensible of their unfortunate condition – He who wishes to have the least labor with his bees will have the least to do with feeble colonies – Candy I find to be a very convenient thing with which to feed for temporary purposes – I find but very little brood in the colonies which have been so bare of honey – Rev. E. D. Sanders – hived a swarm in one of my hives about the middle of June – it was only moderate – after it had nearly filled the hive with comb he divided it – by judicious feeding – he has now two very good hives of bees – (12th) Quite cool – Breeding had almost entirely ceased in the hives so bare of food – The colonies appear to be very free from worms – Have noticed the worms most among the brood – I find it very easy to feed for temporary purposes with sugar candy – think it will answer admirably for Spring feeding – will encourage the bees to breeding – and be safer than liquid honey – (Sep 20th) Found a great many eggs in the hive which had a Queen born Sep 2 – showing that even as late as Sep. they may be impregnated – (Oct 6th –) Colonies which have been fed began to breed more freely – very moderate Fall feeding as well as Spring feeding will not be apt to encourage breeding – (Oct 18th) Found in some colonies quite a considerable amount of sealed brood – the weather has been unusually warm and pleasant – although a few days ago there was a hard frost – (Oct 21st) Weather still warm for the season – found eggs and brood in all stages in one of my hives

(Greenfield Mass Nov. 10th 1852) To day broke up a Huber Hive – it contained a powerful swarm of bees – the hive was deficient in protection – the bees have been in it about eight years – there were the remains of Queen cells in it – it has never swarmed and must therefore have renewed its Queen – the Royal cells (one of them had certainly produced a Queen) – Most of its comb had never been renewed – and yet the bees were full size and very vigorous – The hive was well ~~drummed~~ drummed before it was opened – and the bees manifested but very little anger – The combs with their honey etc were transferred to one of my hives – By cutting the combs a trifle larger than the frames they may be crowded in so as to need no tying – old comb bears crowding –

Nov. 17. 1852 – The bees in the hive before mentioned were furnished with water
as the weather was too cold to allow them to leave their hive –
they secreted wax and attached the comb – to day they were put into winter
quarters – over one of my Protectors – (Dec. 2. 1852) Weather extremely mild for the
season – The bees in the hive on the protector did not stir any more than in a dead
of winter – while bees in other hives were out in great numbers –
(Dec 9th 1852) The weather for the last week has been uncommonly warm – by raising the blocks
the bees in the hive on the protector have flown as usual – The Hunter hive which I
transferred had been 8 years in the hive – it was very vigorous – and the old comb did not
seem to be any the worse for age – (Jany 19th 1853) Until the last week the
weather has been unusually warm for the season – bees in some hives have been
on the wing – in those over the Protector all still – Temperature in the Protector
for the last week has not varied more than 8° – highest 31° – lowest 28° – This
shows that it answers most perfectly the end designed –
March 20th Pleasant – Bees flying briskly – 21st – Very warm 62° – Bees flying wonderfully –
Looked into 1 hive transferred Nov. 10th – ~~Rags~~ Pieces of comb ~~mouldied~~ moulded some – as 1 bees could
not fly out after they repaired and fastened combs – bees very numerous – ~~quite~~ a number
of drones – say a dozen or more – some had just hatched – a royal cell started with
nothing in it – could see no young brood – fear queen has died of old age – Weather in Protector
32° – March 29th Warm – bees flying – have been still for some days – they evidently prefer
the rye flour to the wheat – this a great discovery – 31st – Bring in considerable bee-bread –
Began to get honey considerably – April 27th – Spring very forward – all the storms have cleared off
pleasant – a tree clean off – May flowers at its height – bees very forward – gather honey powerfully –
May 9th – Storms still clear off warm – peach and plum and cherry in full blossom – dandelions
considerably – Maples beginning to fail – also willows – maple blossoms exceedingly abundant.
June 3rd – A noble swarm – lost one last week not watched – White clover
worked on by bees – raspberries – Saw a Queen lay when the comb was lifted
out of the hive! A very small colony helped prodigiously by giving comb –
Season thus far very propitious for bees – Tulip tree not in blossom yet –
June 4th – Examined frames in two new swarms – in each comb quite regular
without any guide – in one was eaten off the edge – think that the new frames
will answer without any wax or comb as guides – Weather changed very
suddenly to cold – clover out very much – bees work on raspberry –
5th – Bees swarmed yesterday – after having left the new hive and went back
to 1 old one – Queen Cut. 6th – Formed an A.S. – from a hive expelled

from common hive a month ago — shook out bees with Queen — shut up the old hive — allowed new one to be on position of it — Drove a swarm from common hive — placed it with Queen in a new hive put them in a new place — old stock in old place — each had their liberty. Drove another — did not see Queen — put them with [illegible] comb in their hive in place of the old stock moved this and gave the bees their liberty — too late to try — c.f. S— made early ~~[illegible]~~ ~~[illegible]~~ worked with prodigious ~~[illegible]~~ — heard of two swarms leaving one yesterday — one to day — (June 7th) Found Queen in hive which was driven — Drove another before breakfast with apparent success — drove another at noon caught queen clipped her wings — drove another 7 P.M. (too late) Found a number of Queen cells one sealed — cut out some — gave them to three old stocks from which Queens were forced — Forced swarm exceedingly uneasy if not near dark it'd have left the hive — gave them the sealed Queen they were pacified — but only for a short time — Queen must have been left in old hive — forced swarms which were put on the old stand work with great vigor — (June 8th) Forced swarm of yesterday before breakfast without a queen and raising young ones from brood comb given to them — Forced swarms all work with great vigor — Natural swarm came off 11 1/2 A.M. — clipped wings of Queen — transferred a colony [illegible] to hive that swarmed — found two sealed queens — a number unsealed — and one which only contained an egg — transferred the comb, brood & with the bees — (June 9th) Drove a colony — went in to hive beautifully — in less than half an hour became uneasy — had no queen — returned them — Heard piping in four hives — Clover abundant — bees get more honey from it — but nights too cool and not yet the usual sweetness — (11th) Natural swarm fine but small — clipped wings of Queen — they worked well — the next day joined a new stock here — (12th) Hive with piping swarmed 3d class piper — Old hive whose swarm returned a week ago [illegible] for hiving — Bees work eagerly on clover — (13th) Drove two swarms caught Queen of one — clipped wings —

Bees in hive removed that the forced swarm do remain very well — Found 8 queens started in Mr Barnard's hive — they have filled comb given to them but have built no new comb — Forced swarms are all working with great vigour — Weather very sweet — 3 colonies piping — (14th) Had three swarms two from pipers — (15th) Forced swarms — when I do not see Queen she is almost always left behind — 16th — Saw a colony which threw an enormous swarm from a hive holding more than a bushel and a half — drove it afterwards & it contained a prodigious number of bees — brood — and was one of the heaviest hives I ever saw — Large hives! ~~It~~ however threw a third swarm — In one piping is over — in the other continues — found before the latter a dead Queen — Found near night outside of one of my afterswarms a young Queen unattended — used her for another hive — Weather has been very hot and dry — beautiful rain this P.M. and very — 19th — A large swarm lit upon an old dead tree around which a honeysuckle and trumpet flower grew making the worst place I ever saw — got them (most) into the hive several times — all of no avail — at last placed box over the tree and threw pails full of water upon them so as to drive them up — did not secure them until Saturday evening — more than 24 hours after they swarmed — Had a good second swarm — caught Queen running over the alighting board shut her up in a paper cone — when the bees became uneasy gave her to them — many afterwards lit repeatedly on the fingers that held her! put paper cone before them — a number entered it — walked away [illegible] — the most stayed in — set it down — and some kept going in and out for several hours! This demonstrates that the Queen has a peculiar scent or smell which attracts the bees — (20th) Drove two colonies — one had been driven two weeks ago and ~~bees~~ colony set on a new stand — as it had retained the larger portion of its bees it was quite strong — found six sealed Queens nearly mature — ~~(21st)~~ Failed to get Queen of one — have driven it six times and failed to get Queen! (21st) Forced another successfully — Helped feeble stocks — 22nd — Forced a powerful colony which had not swarmed — bees hung out much — shut them up — too close — comb given to them melted down — many bees killed — bodies distended with a yellow mass of filth — same as last year — ~~22~~ Forced again the hive so often forced — but a few bees left — saw Queen at bottom — did not come up — had to cut out the comb to get her! ~~Forced the~~ Some of my Queens in nuclei hatched to day —

Those that were kept long from heat of bees did not hatch - Took away young Queens from nuclei to give them to larger Queenless stocks so as to prevent them from building drone comb - gave nuclei other unhatched ones - Gave a driven swarm an old Queen not their own - they received her at once - The brood of a hive which had been driven having been left a ~~long time~~ few hours without the bees the worms first put their heads out of the cells and then tumbled themselves out in great numbers - they were almost ready to seal over! Tried again the experiment with paper roll in which Queen had been put - numbers kept entering it - made another like it - in which no Queen was put - they would not notice it - brought a few (4) home from 1 Apiary - at noon - at sun-set one was still on it - shook her out - took it away - kept ~~hav~~ hovering about in search for it - when put back entered it - again - carried it back to the apiary - bee then left it - it _is smell_ - I have _bushed_ my hives with new Queens - did not do it in one - saw them towards night very uneasy - running about - they had comb with brood given to them - they appeared (it was two days ago) to have left the hive - and seem to have entered one with their board of same _color_ but some distance off - saw to day drone comb building - suspected - found queen cells started - hives ought all to be _carefully bushed_ when young Queens are to leave them -

(24th) Weather quite cool - bees have worked most wonderfully - but to day the weather changing from intensely hot - but little done - saw a young Queen unusually small - others quite large - one pale in color like a just hatched worker - saw one of this kind last year - Fear that several of my after-swarms which stand close together have lost their Queens - they do not appear to have attended to the brood given to them - hives with young Queens ought to be kept at a distance from others - or bushed in a very decided manner - suppose that they were turned around - until their Queens had been impregnated?

25th - Still very cool - bees doing but little - fear that I have tried to multiply too fast - shall try to make no more - but to build up what I have - it is not well to disturb bees too much by opening - taking out comb &c - In my hives an increase of one from two best - Don't move old hives - get bees wanted from two with one of the Queens - a few combs say 1 from each - brood maturing - have sealed Queen to give one left Queenless next day - no more swarming and all powerful - this seems to me more and more the plan of Nat. Swarms - double first swarms - and remove all Queen cells but one

If on fixed place—bees escape the hot stay—strengthen up more with returning bees—
Then no more fussing—but furnish rapidly with boxes—and let honey making be the
order of the day—(26th Sunday) very cool—bees do next to nothing—
(27th) Cool—beginning to rain—Some of my hives with young Queens have had
been lost [illegible] one which was not marked—this hive had blocks be-
red—and the bees appear to have entered another hive (these being
between) of the same color! If my hives so well marked I do not think that
the Queens [illegible] to be lost—color has a powerful influence—in this case it
marked the young Queen—will answer admirably to prevent bees from going
to wrong hives—and with by "brushing" young Queens are [illegible]—When
I had only four or five hives scattered on the protector on which there are
now 12 the fewer being all of one color the bees made many mistakes
and kept flying about until [illegible]—now they fly to all 12 by [illegible]—
Visited some exceedingly strong stocks in [illegible] of a [illegible]—swarms of this
year—early—brood hatching—the more and more importance of having early swarms—
For the last four days nothing done by bees—too cold—to day too wet—Bees have
been crossed to-day when opened—no sweetened water used—difficult to get
along without—have now a number of young Queens of different ages coming
forward—the young Ones I have seen unimpregnated quite large and of a very
decided color—last year noticed same same—am not [illegible] able to tell young
ones from old ones—think I clipped wing of an unimpregnated one—bees
left hive next day—it was a second swarm first had gone off unnoticed—
wings ought not to be clipped until bees begin to breed unless certain—
(28th) Drove a swarm—it had already swarmed—found Queen [illegible]
and one hatched and two still sealed up—Drove a very
heavy hive—had swarmed—took 50 lbs honey—hive almost full of honey—
but little brood and little room for it—cells where young bees hatched all
filled with honey—I am more and more inclining to quite large hives
and plenty of bees to begin with—driven only went to work [illegible] next
day—(29th) Drove three swarms—one an old one in one of my hives well
adapted to regular comb—found [illegible] [illegible] Queen cells—2 just hatched
in one [illegible] among [illegible]—three cells [illegible] together—(30th) Tried
to make a driven colony take wing to alight around their Queen—it was
cool—near the old place they went back most of them—shall try
it in a [illegible] away from the apiary—think it my success there
[illegible] caught all bees that have taken wing sure to have new place to

A coly with seven sealed Q. examined - too late one had killed others - one cell still unhatched - gave to other bees - did not cluster on it - found dead ripe Queen in it! give a small nucleus which had hatched a Queen - but cd not be found - Queen cells - found them opened - saw there the Queen - very - very small - and yet impregnated — 30th — Attempted driving unsuccessfully - often below - and bees get down - By shaking bees on sheet can make them take wing — (July 1st) Clover still abundant - Do not find Queens in some stocks to which I gave young Queen - have given them brood comb - saw drone comb building in two - but not in one - test them by giving young brood - giving it from a stock from which I wish to raise Queens - had two exceedingly small Queens from same lot — better keep Queen raising apart from others — (2nd) Cool - but exceedingly dry - bees do not gather very much honey - transferred six colonies from my cheap hives to glass ones. Found Queen in one that I feared was Queenless - they had not begun to raise Q. C. - found none in another - but they were not beginning to raise Q. C. - gave a suspected one brood comb - Queens here seemed to be unusually slow in getting fertile - shall not push the multiplication of colonies further - buckwheat has been sowed in abundance near me - Basswood will soon be in blossom - transferred colonies were exceedingly peaceable - combs are all straight but not uniform in thickness and some waved - but one comb on each frame - like my new hives better than those improved - like the larger air space - ought to be a little larger - ½ inch all around - July 7th - Had some rain the 4th - Bees get little honey - no success in clover - plenty of second crop - bees pay but little regard to it - shall now begin to feed considerably - (8th) Noticed a strong stock in which the end unfinished comb was quite bare of bees - fed - and then it was covered with clusters all ready for comb building - Bees very inactive - no comb building - colonies seem weaker because they are not in heart - as soon as fed they spread and cover the combs - find it best to tip hive back, and pour in from one of the upper holes - shall feed now regularly - strong stocks about a pint a day and weak ones much less - just enough to keep them in heart about breeding - I want to get all my stocks strong by buckwheat and fall bloom time - so that they may gather then

Now is the all important season to strengthen up my colonies – the golden time which if not improved all will be lost – I have forty colonies at my Apiary – about 30 in my hives – of these 15 are strong and will breed comb to help others – 15 are in need of help – I think likely if I am fortunate to have about ten more – but not until later and I can see success with the present lot – Strong ones will want say two gallons a day and weak ones one gallon – say 60 gallons to be fed – this will make it cost about $1.50 per hive to feed – if with this I could secure say 40 colonies in my hives it will pay most nobly – I shall try feeding systematically – Found a dead sealed Queen – bees had gnawed away all the way from her cocoon – Robbers are very troublesome if I open a hive in any [illegible] – (9th) Drove a powerful swarm – had been twice before driven without getting Queen – Broke it up – found Queen with a few between combs – Drove another – amazing quantity of brood. Queen when caught was dropping eggs – If old comb is put in frames – it ought to be fastened very straight – or else it will make the others go wrong – when the frames have nothing all goes best – (12th) Still exceedingly dry – unusual continuance – no honey – Exceedingly difficult to do anything without causing robbing – All operations such as forcing swarms, strengthening, should be done before [illegible] – Am more than ever a believer in moderate increase – Feeding takes a power of food – July 14th – Still exceedingly dry – and bees doing nothing – Plenty of buckwheat sown in my vicinity – all depends upon weather – shall make no more new swarms (June 1854). Was called away two weeks – feeding was neglected – when returned – bees had commenced going to the stores and in spite of all that I could do they continued to go – and grew weaker and weaker – The Winter was a dreadful one for bees – the Spring exceedingly backward – I was away in [illegible] – and my bees were not fed and nearly all perished – In the region nearly all the swarms of last year perished – those who fed them in my hives carried them through – Bees did little this year until late – Commenced swarming in Oxford middle of June – there are I presume but little – they have made a great deal of honey – honey dews frequent – clover very abundant and sweet – Shall have no little swarms in my Apiary since the stores – If my

bees go much to the stores & have returned them — Have had only
two Natural Swarms — have forced a large number always have
succeeded — are a death trap — (June 27th) Forced a powerful one this
A.M. — all right — Hived preparations for swarming in just half of the hives —
Formed an A.S. — 12 days ago — from one in my hive — they have nearly filled
their hive — struck them out in sheets — a week after took away all
Queen cells but one — placed that in together — could drive bees from it
Queen for [illegible] dead — must give them another — one placed in a
glass box in another hive hatched — to-morrow should be well warm —
Have swarmed on Saturday — returned a hive from which swarm had been
forced — cleaned off yesterday — (Monday) — without fighting! In Alabama
Swarming began first week in March — (June 28th) Forced two
swarms — well done saw Queens — (28th) Forced two more — did
not see Queen of old stock — saw Queen young from hive which had
swarmed before — very much more slender than fertile Queen —
Natural swarm from old stock in Munn's comb hive — old stock not very
strong — swarm was not large — Examined hive found a number of
Queen cells but one sealed — one from which a Queen had hatched
naturally!! They must have lost their Queen from disease — and others
raised — Must examine to see whether eggs — Could not see y. Q —
returned the swarm — C. Jos dined by wedding — (29th) A nice
shower yesterday — Bees working very well — Borage which came up
self sowed has been in bloom several days — Here clover very abun-
dant — Hybrid clover bees like — Forced another swarm — put Queen
with a small lot in experimental hive — added the other bees to a swarm
of a week old — after sun-set — first bees that attempted to enter
questioned — no quarrelling however — Saw bees carrying in bee-
bread into an old stock from which a forced swarm with young Queen
not fertile drawn — perhaps do not realize their loss — 30th — Found
this A.M. the added bees united — some which had honey in their sacks —
though nearly all killed — Drummed two more — one had swarmed
17 days before — had a Queen very large from eggs — in one Q. attempted
to enter among the first crop of bees! Q. does not stop but as she
knows where to go pushes right ahead — A most splendid rain
we can — put bees in their hive — Looked at a number of sealed Queens??
with a dull knife — found them after a while all dead — were
hurt — exceeding care necessary to remove them — (See Index Vol. 2.)

Nov. 27. 1851. – This day I have commenced obtaining names for my hive – ~~and~~ I have sixteen [illegible] same bed.

March 15th. 1852. Have heard to day of my success at Washington in the matter of the patent –

May 27. 1852 – Recd $10 – for a hive and right – first profit –

June 11th – Recd 50 cts from two hives – to Mary – first profits –
Nov. 10th 1852 – Recd five dolls. of Dr Beal – first right sold in N. E. –

Dear Redeemer – precious Name.
Who from heaven to save me came –
Knowing well this poor weak frame
Canst thou love me still the same?
Sinful child I bore thy blame
On that cruel cross of shame –
Thou shalt conquer in my name.
For I love thee still the same – Oct. 9. 1883 –

Holy Saviour! Precious Name –
Knowing well this poor weak frame
Seeing all its guilt and shame, Burdened sore with
Canst thou love me, still the same?
Yes, my child – I bore thy shame
On that cross for which I came.
Forward! Conquer in my name – Thou shalt conquer that vile frame,
For I love thee still the same – Oct 14th –

1866) Experiments. (A)

A beautiful golden Italian queen in a colony of black bees — No drones

August 15th — Caged workers with queen to see if queens would be better treated — 16th — Most of workers dead — one queen, one alive — black eggs young workers —

Crickets — August 16th —

[illegible]

[illegible] queen [illegible]

[illegible] here [illegible] not near so much [illegible]

[illegible] to the Mc Cords — at David's — found saw both [illegible]

[illegible] at 12 M. [illegible]

[illegible] three cows — [illegible]

[illegible] which seemed to be intent on killing, 6. [illegible]

[illegible] seems to look much clear and [illegible] than the 9. P. [illegible]

[illegible] on both quite [illegible] black — and the [illegible]

[illegible] had no drone cells and could see no eggs. Hope

to [illegible] drone hatching — also to see whether drones of [illegible] are [illegible]

[illegible] queen — and to [illegible] in either [illegible]

[illegible] S. [illegible] — [illegible] found only two eggs —

[illegible]

[illegible] yesterday [illegible]

[illegible] 2 P.M. [illegible]

[illegible] eggs [illegible] comb [illegible]

[illegible] queen [illegible]

[illegible] Drew the [illegible]

[illegible] [illegible] as to the results [illegible] ~~increasing~~ [illegible] [illegible] for [illegible] [illegible] to-day —
[illegible] 84° — ~~warm, then windy~~ ~~no~~ very dry — Drones in [illegible] [illegible] [illegible]
✓ Also [illegible] ~~for [illegible]~~
do not offer to fly — (8th/4) No drones [illegible] weather intensely hot — 95° [illegible], 96° [illegible]
the eggs gone in drone comb of (2) with [illegible] [illegible] In (1) comb 9 [illegible] has hatched — 16 [illegible]
[illegible] eggs [illegible] [illegible] the drone larvae [illegible] [illegible] [illegible] to no
pollen — some cells had it. 4th/2 P.M. — Drones from 3. N. 2 — fly [illegible] — most of these
must have taken wing — about 8 days old [illegible] [illegible] [illegible] [illegible] [illegible] here de-
layed [illegible] — (10th/6 P.M. — no drones from 3. N. found [illegible] (11th/6 A.M. — [illegible] drones [illegible]
It is evident that most of these drones [illegible] [illegible] eggs laid [illegible] [illegible] — (12th/6 A.M.
15 sealed drones [illegible] [illegible] [illegible] 3. N. (13th/6 A.M. — 25 drones sealed — 3½ P.M. — 36
[illegible] queen with signs of impregnation. At 6 A.M. — removed [illegible] from [illegible] (2) to 3. N. 2 —
Drones given to [illegible] (2) killed — queen has not shown impregnation — were [illegible] — [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] of these queen cells [illegible] [illegible] [illegible]
3½ P.M. — queen [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] comb — [illegible] drones or queen [illegible] to have [illegible] — 4 P.M. — Drones began to fly all
at nearly the same time [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
have been [illegible] pollen [illegible]! (14th) At 3½ P.M. [illegible] queen with signs of impregnation [illegible]
[illegible] cells [illegible] [illegible] what I call [illegible] cells — [illegible] [illegible] [illegible]! (15th) [illegible]
N. 2, from [illegible] (3) [illegible] drones were killed — [illegible] [illegible] in 3. N. (2) — (16th) [illegible] [illegible] eggs
and queen [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] yesterday — great [illegible] [illegible] made [illegible] [illegible] — [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] — [illegible] 3. N. (1) has about 60 sealed drones [illegible] [illegible] eggs [illegible] [illegible]
[illegible] drone cells [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] the eggs [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] eggs [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
besides quite a number of drone larvae which could only come from fertile workers — at [illegible] [illegible]
[illegible] queen has laid [illegible] [illegible] — That is [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
eggs — [illegible] [illegible] in [illegible] cell — queen [illegible] [illegible] an egg — [illegible] [illegible] [illegible]
July 25th — 6. A.M. — no drones hatched — 5 P.M. — Two hatched two hatching —

Longing queens – Can it [illegible] the following:

Weight of eggs of queen — Experiment to ascertain — Get her to lay in new comb (weighed previously) with very nicely a few hundred eggs — then see no honey or bee bread — get rid of eggs & weigh again — afraid too nice a thing to be determined — wd she not (at 3000 per day) lay her own weight —

Size of triangular comb guide (August 28th 1866) — make some with only a very small guide just enough to form a support for the two sides of the few first cells —

[illegible] has a box of twice the size of these [illegible]
and two [illegible] [illegible] [illegible] with fine wire [illegible]
[illegible] [illegible] once [illegible] take place — the eyes [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] — no more [illegible]

[illegible]

[illegible] 4^{30} [illegible] [illegible] have gnawed their caps off — [illegible] [illegible]
[illegible] [illegible] [illegible] have hatched [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] else

[illegible]

[illegible] of a [illegible] [illegible]
[illegible] the following [illegible] (12 m.) [illegible] hatching — July (1st)
[illegible] hatched [illegible] [illegible] back (3rd) [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] had a [illegible] [illegible]
[illegible] [illegible] [illegible]
[illegible] hatched [illegible] [illegible] cells [illegible] [illegible]
[illegible] found [illegible] under [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]

Mr Cord Cramer [illegible] flying and largely [illegible]
the [illegible] of the drones flying – bees buzzing at drones – [illegible] he gave [illegible]
[illegible]
[illegible] first the dead drones [illegible] were [illegible] and not [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
(6th) 5 1/2 A.M. – Mr Cord [illegible] has [illegible] – Come up from [illegible]
queen does not travel much – but [illegible] that she has been fertilized.
[illegible] (1) queen travels much – drones all [illegible]
[illegible]
[illegible]
[illegible] 9th [illegible] – [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
(9th) [illegible] Cord Cramer [illegible]
[illegible] drones. Cramer (1) [illegible] many [illegible] – no sign of [illegible] – (2) many [illegible]
with [illegible] (3) many dead bees – [illegible] much [illegible]
[illegible] – heat has been [illegible] none [illegible]
[illegible] that in [illegible]
no brood [illegible] or many [illegible]
[illegible] (1) [illegible] +11th [illegible]
[illegible] Cramer (2) has killed the drones – gave some [illegible]
[illegible] (2) all killed – [illegible] (3) [illegible]
[illegible] eight ago – not so many dead bees – [illegible] to day [illegible]
[illegible] killed [illegible]

13th [illegible]

30 [illegible]

N. [illegible]

16th [illegible]

[illegible] – which he could not [illegible]

this P.m. – and so [illegible] in nothing [illegible]

[illegible] 11th 1848 – The [illegible]

[illegible] 1852 [illegible]

[illegible] 1851 [illegible]

[illegible] in four years [illegible]

[illegible] I want to [illegible]

[illegible] found for [illegible]

[illegible] 80° [illegible]

[illegible] 68° [illegible]

[illegible] 85° [illegible]

[illegible] 85° – [illegible]

[illegible]

[illegible] 90° – (22) 74 .. 92 – (23) 72 .. 90° – (24) 74 .. 93° [illegible]

[illegible]

B(1) Suggestions &c for Chapter on nuclei &c

April 28th 1868 — Can now get rid of annoying bees when shaking them off to form nuclei from combs having them freely gathered honey — Before such combs full of bees about five a ten minutes before shaking — bees will suck at the honey —

Quere 1st — Shut up nuclei by day when first formed — until them — Not open at dusk — shut again at sunrise — bees less uneasy — Add bees to them when too weak — and until for a day — if weather very hot not in cellar — a large packing box with bottom out to cover them — and try to rest on the grass in a cool and shady place — in very hot weather would save the necessity of carrying them into the house —

July 24th 1867 [illegible] (28th [illegible] 86°) [illegible] [illegible]

[illegible]

[illegible] (28th [illegible] 89°) [illegible]

[illegible] even before the [illegible]

[illegible] 27th 90° [illegible]

[illegible]

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[illegible] Edmund [illegible]

[illegible]

[illegible] the [illegible]

[illegible] they [illegible]

[illegible] Hollow [illegible]

[illegible] by the [illegible]

[illegible] of the [illegible]

[illegible] claims this from the [illegible]

[illegible] the Course of [illegible]

[illegible] only on [illegible]

[illegible] and [illegible]

[illegible]

[illegible] from [illegible] the A [illegible] 3 × 1 × 8½ [illegible]

[illegible] made [illegible]

I [illegible]

[illegible]

[illegible] Both [illegible]

[illegible] the [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Found, that the [illegible] of [illegible] which [illegible]
the 12 [illegible] is 2 7/12 [illegible] 8 [illegible] it seems to [illegible]
that the [illegible] of the [illegible] 2 [illegible]
[illegible] 1/4 each [illegible] 4 [illegible]
[illegible] 8 1/2 [illegible] 24 1/4 [illegible] that they
[illegible] conform to the [illegible] of [illegible] — the [illegible]
[illegible] 45-12 [illegible]
[illegible] 481
[illegible]
[illegible] 53.61 [illegible]

[illegible]

[illegible]

[illegible]

of the [illegible] with the [illegible] of the

[illegible] and the [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] appearance to the [illegible]

[illegible] would be [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Jan 24 1888 – [illegible]
[illegible] of [illegible], the [illegible] for the
[illegible] – may have [illegible]
to the [illegible] of [illegible]
[illegible]
the [illegible] (2) [illegible] in the [illegible]
[illegible] to [illegible] to the [illegible]
[illegible] (3) [illegible]
[illegible] for the [illegible]
[illegible] the [illegible] of the [illegible]
[illegible]
[illegible] (4) the [illegible]
[illegible]
to [illegible]
[illegible]
[illegible]
[illegible] 8½ × 4½ × 2½ – [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] 1½ × 4½ × 2½ – [illegible]
[illegible]
[illegible]
[illegible]

[illegible]

[illegible]

[illegible] [illegible]

[illegible]

[illegible]

to [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] —

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

Aug. 20th (Crawford) [illegible] — [illegible] [illegible] [illegible] for making [illegible] [illegible] [illegible] [illegible] [illegible] — and for making [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] —

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

As the far—

March 29th 1888 — Wm Cowan had a number of my press-molded bricks marked and burnt. No difficulty in molding but rather [illegible] — They have been brought from the brick yard to our home in Dayton — carefully handled [illegible] — At the breakfast table this A.M.
See p. 125

Illustrations —

A beautiful, golden Italian Queen in a colony of black bees — "So shines a good deed in a naughty world"
Shakespeare — Merchant of Venice —
If bees are up to attack when opened — stop any [illegible] softly until they quiet — Defer intercourse with angry natives —
If a colony is given too much fine comb —

A bee stung me through a hole in my boot — That's the heel of Achilles —
If the combs are separated too much and empty frames put between bees will often desert — Do not urge an unwilling horse —
Bees eat enormously on journey when confined — Gluttonous men on voyage of steamer — five meals a day — eat, drink &c —
Rule of queen — very much like English Sovereigns — who rule in name but are obliged to do pretty much as the Commons say —
When you head for places looks all right — moment you get into a [illegible] all wrong and know not what you will get — Rail Road — on the track all right — off — know not where you will be landed

Phil^a –

Jan^y. 20th. 1852.

Thermometer 6 A.M. –	− 4°	Mean + 1.75°
9 A.M	0	
3 P.M	+ 8	
9 P.M	+ 3	

S. S. S.

Nov. 19th 1852 –
Weighed 155 lbs –

Feb, 10th 1853 160 lbs !!
August 27th 1862 – 177 lbs –
Nov 1882 191 –

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
Rent	30
Labour	11 [illegible]
	[illegible]

Greenfield 1853
March ~~April~~ 13 – Blue Bird
" 20 Robin –

Greenfield Feb, 1855
7 A.M – − 30°
12 M – − 14°

August 16th 1852 —
M. H. Simpson $150.00

Chanley 1st Sept — 4 Months $250 — grace
Charley 2nd Oct — 4 Months 250 without grace —

Wednesday 21st Slept at [illegible]

[illegible] — [illegible]

200 = [illegible]

Oct 2d — 1862
S. D. [illegible] — Note $51.93 — 53

[illegible] receipt for sugar syrup — 5 lbs of sugar to a pint of water [illegible] the [illegible] time — [illegible] make it [illegible] early —

Here to refer to Journal of work, volumes to be in the library —

V. C. 1 —	Jan. 26th 1852 — Journal begins new book of books — runs to Oct. 21st —		Philadelphia Pa.
	Nov. 22nd 1852 to June 30th 1854 — continues right on — Kept in Greenfield Mass —		Greenfield Mass —
Vol. 2.	July 1st 1854 to May 28th 1855 — new book of Vol 2 —		Do
Vol. 2.	May 28th 1855 to July 23. 1858 Under letter	Za —	Do — Oxford Ohio
V. C. 2.	July 23 1858 to Feb. 2 1860 —	Yw	Oxford
Do	Feb. 3rd 1860 to March 1, 1860 —	To —	Flushing Long Island
V. C. 1.	Apr. 2, 1860 to May 28 1860 —	Wu	
Do	May 26th 1860 to June 22, 1860 —	Ye —	Oxford.
Do —	June 23, 1860 to May 31st 1861 —	Za	Oxford —
Do	May 31st 1861 to June 2 1862 —	Ca	Oxford
Do	June 2 1862 to June 18 1862	Ha	Oxford
Do	June 19th 1862 to August 9th 1862 —	Zo	Oxford
Do	August 16 1862 to June 8th 1863	Vi	Do —
Do	June 8th 1863 to June 11th 1863	Ho	Do
Do	June 12th 1863 to June 18th 1863	Ra	Oxford
Do	June 18th 1863 to June 26th 1863	Ri	Do
Do	June 27th 1863 to July 15th 1863	Jo	Do
Do	July 15th 1863 to August 5. 1864	Fo —	Do
Do	Aug. 6th 1864 to August 2. 1865	Hi	Do
Do	Aug. 2 1865 to Nov. 26 ~~1866~~ June 4th 1866	Ji	Do
Do	June 4th 1866 to June 30th 1871	Io	Do

Mr [illegible] [illegible] of [illegible] [illegible] [illegible] [illegible]

Mr [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] March 8th 1862 –

[illegible] [illegible] [illegible] that [illegible] [illegible] [illegible]

[illegible] [illegible] in 1859 – Apr 5th

[illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] (?)

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] April 18th 1862 –

[illegible] [illegible] [illegible] [illegible] [illegible] –

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] April 24th [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] –

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – May 10th 1862

[illegible] [illegible] [illegible] [illegible] [illegible] –

Mr [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] May 17 [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] ([illegible] [illegible] [illegible] Aug 10th 1862 –

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – Aug 15th 1862

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible]

[illegible] [illegible] – [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] — [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible] the [illegible] – [illegible] [illegible] [illegible]

Mr [illegible] [illegible] [illegible] [illegible] [illegible] May 21 1867

Mr [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – Feb 20 1868

[illegible] [illegible] – [illegible] – Oct 12 1868

Mr [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] –

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – March 12 1868

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August 28th 1938 – Last Feb. I had a considerable stroke of paralysis affecting my right arm and leg – the leg but little – the arm very considerably – It did not affect my speech or mental powers By June I had recovered from my head trouble [illegible] within 4 so many years – and I have [illegible] [illegible] [illegible] – Ever since I recovered from my R.R. accident of Jul 1934 I have been much troubled by [illegible] and [illegible] of my legs right one more especially – after sitting in [illegible] [illegible] it became very difficult for me to take my legs especially in going up or down stairs – Early in June I noticed that this trouble had disappeared – and since then I have been able to use my legs as [illegible] before that accident [illegible] of years ago [illegible] – I [illegible] get tired in my legs – but [illegible] in my back [illegible] On Tuesday 21st I went to Hamilton and was treated for piles by Dr [illegible] – The operation was [illegible] [illegible] – the [illegible] already diminished – [illegible] [illegible] to the T.R. [illegible] Co. informing them that I should give the [illegible] of the [illegible] of my [illegible] to "Pickard & Sons" [illegible] that I [illegible] why we could not agree on terms – Sept 16th – Had another [illegible] operation by Dr [illegible] for my piles – Dr [illegible] I [illegible] you [illegible] your [illegible] as healthy as it was when you were [illegible] [illegible] – Since the first operation I have been able to [illegible] for many years – [illegible] on my feet – [illegible] Sept 22nd. Since the last operation [illegible] have been [illegible] – and [illegible] of the [illegible] hardly anything to [illegible] of my old [illegible]! [illegible] who for [illegible] [illegible] hundred [illegible] to me in my old age to be made to feel that I have the [illegible] 54

14. [illegible]

Dayton, Ohio Oct. 6th 1887 — Removed from Oxford to this place the latter part of August — my son in law H. C. Cowan bringing his wife and seven children — His eldest son D. Lorraine Cowan is office boy in the firm for which his father is principal bookkeeper — Aurelius H. the next in age and Hugh C. the 3d son attend the High School — Elsie Belle the next and Willie Longstreth the next attend one of the lower public schools — The two youngest Anna Louisa and Julia do not yet attend school — About June 1st 1885 I had a return of my old head trouble — and the longest attack but one I have ever had — Soon after reaching Dayton my neck began to soften — and my recovery was very rapid — not quite so much so as it has often been — I have suffered no serious inconvenience from piles since (nearly three years ago) I was treated by Dr Pretzinger — Oct 3. he found two 2 more hemorrhoids about the size of hazlenuts and operated again — I have availed myself of the privileges of free membership in the Y. M. C. A. and can have hot baths which have always helped me — I propose to do all my writing in their parlors — Bless God Oh my soul for all his benefits! Nov. 1. 1887 — yesterday was operated upon for what seems to be my last pile — by Dr Pretzinger of Greenville O. When he began with in the Spring of 1885 I was a great sufferer — had used injections for a movement for nearly two years — one large one had protruded for nearly a year — frequent bleedings — hurting me more than half of my time —

In December 1885 seemed almost cured – the return of my old [illegible] compelled me to relinquish further treatment – Oct 8. the Dr found only two – size of a ~~large~~ hazel nut – Oct. 31 – only one – Rectum nearly all right – the muscles in good condition – For the last month my health better than I can recollect it to have ever been – Have used an unusual amount of walking exercise Mind very active – very happy &c – Nov. 15th – Continue bright and well – On Saturday (13th) Met Capt. Stiver Principal of Dayton High School – Made very happy to learn from him that by availing himself of my suggestion (opening a door leading to the tower) the ventilation of that building was greatly improved – Happier I think than many a man who has made a large sum of money! Have had a very large double heater base-burning anthracite stove put up in our dining room – By opening window for a short time before bed hour, room below filled with pure air – and bed room all night long supplied with a moderate flow of good air – Nearly 50 years ago at Greenfield Shop I discovered and applied the principle on which these double heater self-supplying base burners work – Had bandbox sheet iron air tights – the doors were not tight enough and when wind blew strong, admitted so much air as to burn the wood too fast – Had a whole cut in the smoke pipe near where it entered flue – guarded by a riveted piece of sheet iron – By opening this – the air rushed into the flue relieving the draught thro the stove – in other words draft checked without air admitted to burn out wood too fast! But for the use of this principle it would be impossible to regulate base burners – Every door with isinglass admits air, and if this acted fully on the fuel ~~without~~ before passing into the flue, a moderate combustion could not be maintained – Too many isinglass doors are now made – for economy of fuel –

August 16th 1895 – Y.M.C.A Parlors, 11 A.M. – May at some other time set down occurrences from where I left off – About last of May began to recover from an attack of the "head trouble," (melancholia) which has lasted nearly three years. Recovery not in quite so short time as usual. I have been [illegible] for a full description of my case to Dr. [illegible] Ward who has the care of me.

/ 1172-

Drones – July 16th (extract from another record.) – The bees are killing drones – So have determined to carry on some observations at 9.45 a.m. [illegible] a good drone comb (after [illegible]) [illegible] [illegible] years [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] a number of eggs [illegible]

17th. Removed at [illegible] a.m. [illegible] 18th 5 1/2 P.M. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – 24 days [illegible] [illegible] [illegible] [illegible] 11th 6 A.M. [illegible] 13th 5.50 A.M. [illegible] [illegible] [illegible] [illegible] Drones [illegible] 17th [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 19th 2 1/2 P.M. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 3.15 P.M. [illegible] 3.15 – [illegible] at hive at 3.05 [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – 3.18 [illegible] [illegible] – 3.20 1/2 [illegible] – 3.21 [illegible] – 3.22 1/2 [illegible] – 3.23 1/2 [illegible] – [illegible] – 3.21 [illegible] 3.19 [illegible] 3.24 [illegible] – 3.24 [illegible] – 3.24 1/2 [illegible] – 3.20 [illegible] – [illegible] – [illegible] – [illegible] [illegible] [illegible] [illegible]

[illegible]

August 28th 3 P.M. Temp. 46° [illegible]

[illegible]

August 30th [illegible] Temp. [illegible] 50° [illegible]

[illegible]

[illegible]

N.B. [illegible]

He has I thought [illegible] the dentist's prejudice in the [illegible] to prevent them from becoming "together" [illegible] perfect [illegible] – as I have found by a two months trial – very difficult to operate rapidly – when either the top or [illegible] of [illegible] are made wholly or partially close fitting so as to prevent the spaces between the [illegible] from being [illegible] by water, then the [illegible] cannot be kept somewhat farther apart to prepare the [illegible] for [illegible] by getting greater thickness of [illegible] and more space to [illegible] – [illegible] D.C. [illegible] or they be kept farther apart [illegible] in the [illegible] without great trouble, and are the special advantage of the close fitting [illegible] being [illegible] – The [illegible] in my opinion [illegible] [illegible]

1st [illegible] of the [illegible] [illegible] the [illegible] – [illegible] [illegible] for [illegible] [illegible] [illegible] just begun to [illegible] – [illegible] [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – a great [illegible] [illegible] the most [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] of [illegible] [illegible] [illegible] [illegible] – for my [illegible] – [illegible] [illegible] I [illegible] [illegible] a [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] for the [illegible] [illegible] [illegible] [illegible] two months [illegible] [illegible] [illegible] – I [illegible] [illegible] [illegible] of my [illegible] – [illegible] [illegible] [illegible] [illegible] to [illegible] my [illegible] in the [illegible] and [illegible] [illegible] that my [illegible] began to [illegible]

[illegible]

[illegible]

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[illegible] me a [illegible] — [illegible] at [illegible] — Stele. [illegible] in the [illegible] at [illegible] to [illegible] — [illegible] in the [illegible] they [illegible] a great [illegible] — [illegible] years [illegible] years! [illegible] [illegible] a [illegible] in your [illegible]! [illegible] of [illegible] that they are [illegible] great [illegible] [illegible] [illegible] the [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] from [illegible] —

[illegible]

18th – Colonies in blocks are hybrid but now having pure queens 107
and when most of the bees are [illegible] that the [illegible] hybrids are bad
queens at the entrance – [illegible] bees for [illegible] – young bees for [illegible] –
[illegible] of the hybrids have been [illegible] [illegible] and [illegible] [illegible]
in the the best bee side of it can be [illegible]! Drones
Have confirmed and enlarged my observations of yesterday on drones

12 3/4 P.M. Cloudy and nearly calm 73°. (from 62° to 70° [illegible] today)
[illegible] quite early in the A.M. and so [illegible] [illegible] [illegible]
[illegible] taking honey drones and [illegible] that [illegible] drones [illegible] gone
in the past [illegible] – [illegible] of [illegible] [illegible] back to the hive and
[illegible] of [illegible] [illegible] [illegible] – Drones [illegible] in the [illegible] –
[illegible] [illegible] [illegible] to [illegible] [illegible] – [illegible] the [illegible] [illegible]
[illegible] a number of returning drones [illegible] [illegible] that on [illegible] on
[illegible] they [illegible] [illegible] [illegible] – [illegible] [illegible] of [illegible] [illegible] [illegible]
at yesterday – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] of [illegible] – [illegible] of [illegible] [illegible] – [illegible] [illegible] [illegible] of
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] – At 1.30 P.M. – [illegible]
[illegible] for [illegible] to [illegible] [illegible] [illegible] 26 [illegible] – Cloudy [illegible] –
[illegible] [illegible] for drones – 1.58 [illegible] – 1.59 [illegible] – 2.04 [illegible] 2.09 [illegible]
2.11 [illegible] 2.11 [illegible] – 2.14 [illegible] – 2.15 [illegible] – 2.16 [illegible] – 2.15 [illegible] 2.17
[illegible] – 2.19 [illegible] – 2.19 [illegible] 2.20 [illegible] 2.22 [illegible] 2.23 [illegible] – 2.24 [illegible] = 2.25 [illegible]
2.25 [illegible] – 2.27 [illegible] 2.28 [illegible] 2.29 [illegible] [illegible] [illegible] 2.31 [illegible] 2.32 [illegible] 2.32 [illegible]
[illegible] – 2.33 [illegible] – 2.35 [illegible] 2.35 [illegible] 2.37 [illegible] 2.40 [illegible] 2.42 [illegible] 2.43 [illegible]
2.44 [illegible] – [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] –

19th [illegible] 74° – [illegible] [illegible] [illegible] – [illegible] [illegible] block [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] days old – [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] day.

[illegible]

[illegible] very close to [illegible] than [illegible] what I [illegible] just queen not [illegible] of the [illegible] my [illegible] queen [illegible] queen [illegible] queen [illegible] days old [illegible] eggs [illegible] 39° 50° 80° eggs [illegible]

36°-68°. In one of the colonies which had a young queen [illegible] I [illegible] all night. The queen of the colony I thought [illegible] nuptial flight yesterday. [illegible] queen [illegible] to get them [illegible] October. [illegible] Another [illegible] for that [illegible] yesterday [illegible]

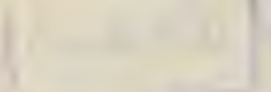
[illegible] queen [illegible] 22 days old [illegible] queen [illegible]

queen [illegible] young queen [illegible]

[illegible] 78°. [illegible] One [illegible] They have all but one

(113) [illegible] feast [illegible] of the [illegible]

[illegible]



[illegible]

[illegible]

15th 20° – 16th 18° – 17th 24°. 56° – A few bees bring white pollen – Opened two hives – brood in two frames – eggs! In half of my hives brood and eggs – very few of these late bred bees are lost and these hives have largely increased in bees – If they winter well – very great gain – Oz Better plan for mouse guard – Tack perf. zinc over whole entrance – In the middle cut out so that dead bees can be dragged out – In very windy cold weather contract with blocks – Is not woolen waste over their burlap about the best winter preparation? So easy to remove when examination to be made – Is it not cheaper and better than chaff cushion – 18th 48° – Heavy rain last night –

19th [illegible]

[illegible] dry off [illegible] easy to [illegible]
easy to get at [illegible] — to put ready [illegible] Pretty good [illegible]! When
[illegible] easy to put [illegible] up [illegible]
[illegible] good [illegible]
[illegible]! [illegible]
[illegible] the [illegible] may [illegible] the [illegible]
[illegible]
[illegible] they [illegible]
[illegible]
[illegible] 28° [illegible] 4° [illegible]
[illegible]
[illegible] 16° 27° N.E. [illegible] 23° 26°
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] 39° 25° 42° [illegible]
[illegible]
[illegible] 30° 30° 45° [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] at [illegible]
[illegible] 9° 16° — [illegible] not [illegible] from [illegible] and [illegible]
[illegible] — [illegible]

[illegible] dragged [illegible] 15° 40 [illegible] many [illegible] have dragged [illegible] pretty [illegible] [illegible]

[illegible] whole [illegible] together before [illegible]

they [illegible]

[illegible] back [illegible] [illegible] of these [illegible] [illegible] back up against something — [illegible] [illegible]

[illegible]

14° 40 – 2 S [illegible]

30' [illegible] many of
mainly bear off of their bath — "the have been wonder where they were [illegible]
between [illegible] simpler than they are just [illegible]
to perform [illegible] just [illegible] for [illegible]
by night [illegible]
but [illegible] seemed to be [illegible] to carry out their [illegible] —
21 30' 58 — Rain has had a great [illegible]
[illegible] and many of them with a [illegible] of "Raining"
[illegible]
[illegible] 15' 56 — [illegible]
[illegible]
[illegible] to rob — [illegible] 15' 14 —

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May 26th 1888 – Hive Jacket – or Outside Casing – This a.m. the idea has occurred to me of a movable outside covering for say the Heddon brood chamber (one section) to better adapt the hive for out door wintering – A movable outside of tarred paper several thicknesses to fit up snug – and left off to let hive warm up when desired by sun – June 5th – Perhaps the following plan may work well – Put the tarred paper (or proper thickness of paper) on the under side of Heddon Bottom board – then, especially if tan bark is kept by thin boards so as to come nearly to the top of stand on wh. B.B. rests – the inside of the B.B. will not get so cold – Now let entry holes be put in the old S. way to receive wire cloth for winter ventilation and to be stopped by the wooden bars at the ~~p~~ part of the year when bees are flying – we can keep the S. blocks nearly or quite closed in cold weather and yet admit all the air needed from below – and this air will not be as cold as what would enter from the usual entrance – Robbing could be stopped in this way by shutting up the usual entrance – and the bees imprisoned have all the air they want –

Now further let the brood sections of the Heddon hive be painted a dark color so as to heat through (draw the sun) Set hive front S.E. – so that in the winter the heat of the sun would warm up – the summer shade cover might be in place at any time to prevent too much heat – Set top cover be of same dark color to heat thro – If bees to winter well out of doors, need when the severe cold is of long enough endurance to prevent them flying about enough to get supplies – may not this plan give it to them?

Cowan & Langstroth bricks continued from (A.)

March 29th 1888 – At the breakfast table this A.M. – a new and probably valuable thought occurred to me in connection with these bricks – viz in building hollow walls to use only enough of my prismoidal bricks (with lower shoulders) to get the means of tying at intervals the walls (front to rear) so as to get all the strength needed – Or if bricks without the lower shoulders are used – then there may be made plain only using, enough for tying, of the prismoidal hollows –

[illegible]

Ventilation – for human beings

October 14th 1887 – I have thought much how to ventilate for human beings – From the bees comes the suggestion of a current of bad air forced out, to be replaced by a current of pure air – Done by the fanning ventilators – just as the air of a sick chamber may be renewed without opening windows, by the so called pumping process with a door opening into any place where there is good air – Ventilation artificial for men, is the establishment of this double current – How to do this where a current of warm pure air can be brought in, and another of impure air carried out – is well known – the difficulty if not impossibility of heating many rooms at different elevations and different distances from the hot air chamber, amounts often to an impossibility. If all is working to satisfaction, a mere change in the force or direction or both of the wind may cause some rooms to be too warm while others are too cold – It has become quite common therefore to heat by radiators with steam or hot water – In one way this is a success – as the proper amount of radiating surface can be secured and the requisite heat attained and controlled – But this gives no ventilation! It is on the old box or close stove system – Now the radiators heating the air, if there are proper vents for it to pass off, it will be easy to get rid of the impure air, and replace it by fresh air which will force itself in at every crack, window &c wherever it has a chance – It is easy to apply this system to all buildings where there is ready access to any steeple, tower &c – If a church or any building must be heated by hot air – Let there be from the audience room, by register and air duct – the means of supplying air to the heating chamber – Say the air in the audience room is 40° – out of doors – zero – the 40° air is sent down and up, and the room heated much sooner than by using the zero air – This answers if the air is as it readily may be, made pure to begin with – Just as soon as the air of the audience room is being vitiated by human lungs, it is no longer allowed to revolve – but fresh air from outside is introduced to the heating chamber – If there is no ready escape for the vitiating air to pass out, the heater works to great disadvantage – To get pure warm air into the room, you must force out air already there – To this is to let in much less hot pure air than you desire – the current is too slow to carry off all the heat that ought to be available from the heater – To counteract this the heater is overwork – fuel wasted and the pure out door air vitiated by red hot or overheated metallic surfaces – In addition the very hot air that comes from the heater chamber is much more absolute of moisture-producing even with evaporating receptacles, that very dry unwholesome air so much complained of. This dry hot air cracks the wood work, and draws its needed moisture from every part of the human body — nostrils, mouth &c. Now if an opening is made for the ready egress of the vitiated air, the velocity of the air from the heater is so much increased as to largely overbalance any loss of combustion from escape of the vitiated heated air of the audience room — and your room will heat all the faster because you ventilate! thus enabling one to accomplish his object without overworking the heater. Now how to get a proper escape for the vitiated air, is easy enough where you have access to a tower, steeple attic &c — but take a room where ~~fresh~~ pure air is needed and which must rely on its own resources. Now what? Outside of one of the windows let there be of zinc or wood a ventilating shaft of [illegible] narrowing towards the top — carried as high as circumstances will permit — when lower sash is raised the bad air will find exit — Good air brought in if possible under stove to be warmed — Churches, School rooms, public rooms &c may in this way get ventilation — this shaft outside being in lieu of opening into steeple, ventilating flue &c — Q.E.D —

Oct 21. Have within the last week arranged for having Miss Sarah Peirce's kindergarten school room ventilated by such an outside shaft — If a patent can be obtained for this arrangement it might prove valuable — but my heart is most set on benefiting humanity — Examined at Dayton the heating and ventilation arrangement of the Dayton High School — Beautiful illustration of how not to do it. The large room for declamation &c can be easily heated by a very cheap alteration of the furnace — using a cone as at Oxford and making the hot air pipes to discharge higher up into the room so as to get the proper slant for the pipes — If their ventilation flue has not sufficient capacity might be enlarged — or outside ones used — The tower also can be used in ventilating the main building. Very little expense — The beauty of my system is its cheapness — it [illegible] being cheaper to get pure air than bad air. {Nov 1 — Last Friday (Oct 29) I had a wooden shaft window ventilator completed in Miss Sarah Peirce's large kindergarten school room — It ought to have been carried above the roof and to have terminated in an Emerson or other roof ventilator — Still with my bee smoker I could show a good amount of air passing through it — In buildings heated by radiation from hot water or steam pipes some coils may be used near the base of the ventilator to increase the draft.

Nov. 3. Unfavorable day to test ventilation. Found Miss Peirce's kindergarten room smoky from wrong arrangement of stove pipe — air not vitiated by humans and ventilator all right —

March 29th 188[illegible] Some time ago David McCaw of Oxford showed me a window ventilator — which was movable and yet might be allowed to remain on the ledge inside without interfering with anything — intended to do what a simple board on which the lower sash rests on has been used for — [illegible] a [illegible] shows the groove to let this board slide into a [illegible] end — This may be inside or outside

151 - If the lower sash is raised just enough not to let air into the room above this strip - then a current of air will flow into the room between the upper and lower sash - and will shoot upwards so as not to annoy the occupants of the room. as when a sash is raised or lowered — This action of a ventilating board is old - when the lower sash rests on the board - and it is necessary to remove the board to fasten the sash or blinds —

On the 27th I saw at the residence of Mr Crandall all his windows fixed with the top of the upper sash made so as to allow four inches to run up into a groove - so that the upper sash could be lowered and the ventilation got - the upper part of the sash might go six or more inches into this groove - This he got from an English writer on Health of homes - and is the plan when a new building is erected -